

Contract No.: 500-88-0006
MPR Reference No.: 7786-501

THE MEDICARE RISK PROGRAM FOR **HMOs--**
FINAL SUMMARY REPORT ON
FINDINGS FROM THE EVALUATION

FINAL VERSION

February 18, 1993

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ACKNOWLEDGMENTS

As is always the case on long and complex projects such as this one, there are many people who were instrumental in getting the work done. This summary report was written by myself, with input from my coauthors-Jeanette Bergeron, Dolores Clement, Jerrold Hill, and Sheldon Retchin--the lead authors of the major project reports on which this summary is based. However, many others have made critical contributions to the evaluation as coauthors of these reports or as lead authors of other project reports on which this summary touches only briefly: Barbara Abujaber, Richard Bannick, Nancy Carlton, Dexter Chu, Rhoda Cohen, Phillip Gleason, Robert Hurley, Kathryn Langwell, Jeanne McGee, Shelly Nelson, Carl Serrato, Richard Shin, Meribeth Stegell, Gary Swearingin, and John Thompson. Thomas Good edited this report, clarifying and improving the exposition substantially.

A long line of individuals have earned our deep gratitude, beginning with our project officer, James Hadley, whom we thank for his helpful comments, his cooperative, open approach to overseeing the project, and his assistance in negotiating with various HCFA bodies for access to data or information. We also thank the many individuals at HCFA who have reviewed one or more of the 17 reports that we have submitted over the past four and a half years.

We owe a large debt to the HMOs that provided us with information and insights. We have asked HMOs for their opinions and for data on their patients, and they have been very gracious in cooperating, while ensuring that the sensitive data that they provide is kept confidential. Nineteen of the 20 HMOs that we selected for the quality of care study provided us with the data that we needed to identify samples of patients with particular diagnoses. HMOs have provided nearly all of the data that we have requested at no cost, despite the fact that they derive no direct benefit. For their contribution to the research we are extremely grateful.

We also thank the hospitals that allowed us to abstract data from their records, again at no charge, and the thousands of Medicare beneficiaries who completed our telephone interviews. **Every single one of the 154 hospitals that we contacted cooperated with the study.** Response rates of 100 percent are virtually unheard of. The response rate for the beneficiary survey was nearly as good--less than 6 of every 100 beneficiaries that we were able to reach declined to be interviewed.

The Group Health Association of America (GHAA) has also been a tremendous help to us, providing free copies of research reports and briefs, answering our many questions, supplying data, and inviting us to their conferences to speak and learn. Sue Palsbo, GHAA's director of research, has been especially helpful and insightful.

Last, but certainly not least, we thank our colleagues at the Medical College of Virginia and at Mathematica Policy Research, too many to name, who have provided support of various types--typing, programming, commenting, contractual--over the course of the evaluation. We especially wish to thank Marsha Gold and Lyle Nelson for their thoughtful and careful comments on an earlier draft of this final summary report.

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EXECUTIVE SUMMARY

Since the early 1980s, the Health Care Financing Administration (HCFA) has been encouraging health maintenance organizations (HMOs) to provide Medicare coverage to enrolled beneficiaries in return for fixed prepaid premiums. Our four and a half-year evaluation of these Medicare risk plans provides evidence that the risk program is achieving some of its goals while not fulfilling its promise in other areas.

THE MEDICARE RISK PROGRAM: ITS PURPOSE AND EVOLUTION

As one of many efforts to bring Medicare costs under control, HCFA has sought to extend to Medicare the cost-efficiencies that HMOs are believed to effect for the health care of the nonaged. HMOs, which act as both insurer and provider, have an incentive to provide care in the most cost-effective manner possible, reducing unnecessary services and providing health care in the least expensive but appropriate setting. The market power of HMOs also often enables them to negotiate favorable prices for provider services. These incentives are in marked contrast to those for providers who treat Medicare beneficiaries on a fee-for-service (FFS) basis, since FFS providers benefit from increasing rather than reducing services to their patients. Since most beneficiaries (about 70 percent) have insurance plans (medigap) to cover the cost of Medicare deductibles and coinsurance, no market force exists to exert pressure on FFS providers to hold down their costs.

The Medicare risk program, which became operational in April 1985 under the aegis of the Tax Equity and Fiscal Responsibility Act (TEFRA), allows HMOs to enroll Medicare beneficiaries and receive a capitated payment in return for providing or arranging for their Medicare-covered services. The capitation payment to the HMO for a beneficiary who lives in a given county is equal to 95 percent of HCFA's actuarial estimate of the average amount that HCFA would expect to spend in FFS reimbursements for a Medicare beneficiary who resides in that county, adjusted for the individual's age, sex, reason for entitlement (age or disability), institutional status (residing in a nursing home or not), and Medicaid eligibility. The county rate, the Adjusted Average per Capita Cost (AAPCC), is equal to the estimated average Medicare reimbursement per beneficiary in the United States, multiplied by the historic average ratio of Medicare reimbursements per beneficiary for the county to Medicare reimbursements per beneficiary for the United States, calculated over the most recent five-year period for which data are available. In return for the AAPCC premium, HMOs must provide or arrange for all of the Medicare-covered services needed by enrolled beneficiaries. HMOs also cover the Medicare deductibles and coinsurance for which the beneficiary is responsible, and can charge a premium for this coverage, as well as for any other benefits covered by the risk plan but not by Medicare (for example, eye exams and lenses, hearing tests and aids, prescription drugs, and preventive care). Each year, participating HMOs must calculate their expected revenue requirement per member month for providing coverage of Medicare-covered services (based on the rates they charge to their non-Medicare members for comparable coverage, adjusted for differences in the utilization rates of Medicare and non-Medicare members) and compare it with their expected average AAPCC payment. The HMO must use any surplus between the expected payment from HCFA and the HMO's projected revenue requirements for Medicare-covered services to reduce the premium charged to beneficiaries or to provide additional benefits to the beneficiary at no charge (or return the surplus to HCFA). Any deficit must be absorbed by the HMO; the premium and copayments charged to beneficiaries are restricted to the actuarial value of Medicare deductibles and coinsurance (calculated by HCFA), and the revenue requirement for any extra benefits.

The Goals of the Risk Program Are to Reduce Costs and Increase the Choices of Beneficiaries

HCFA's primary goal in establishing the risk program was to reduce Medicare costs, by paying HMOs 95 percent of what it would normally spend on FFS coverage. HCFA also sought to achieve two objectives with the risk program: (1) to provide health care that is more efficient than that rendered by the FFS sector, but of comparable or superior quality, and (2) to give Medicare beneficiaries access to the same range of choices of health care delivery systems that are available to younger individuals. HCFA also hoped that costs in the FFS sector would decline as more Medicare beneficiaries enrolled in HMOs. The hope and expectation was that the risk program would be attractive to HMOs, causing a rapid expansion in the number of participating risk plans and beneficiaries.

The evaluation of the risk program was funded to determine whether the risk program accomplished these objectives. In addition to testing hypotheses underlying these objectives, the evaluation has provided estimates of the magnitude of the effects of the risk program, assessed whether they differ for certain types of HMOs, market areas, or beneficiaries, and identified possible reasons that the program did or did not have the anticipated effects. Analyses of the many topics examined are presented in 17 separate reports completed over the past four and a half years (listed in Appendix A), including impact analyses, case studies or special topic reports, and annual reports on changes in the program. This report is a summary and synthesis of the findings from these studies.

Enrollment in the Risk Program Has Grown Steadily, but the Number of Participating Plans Has Declined

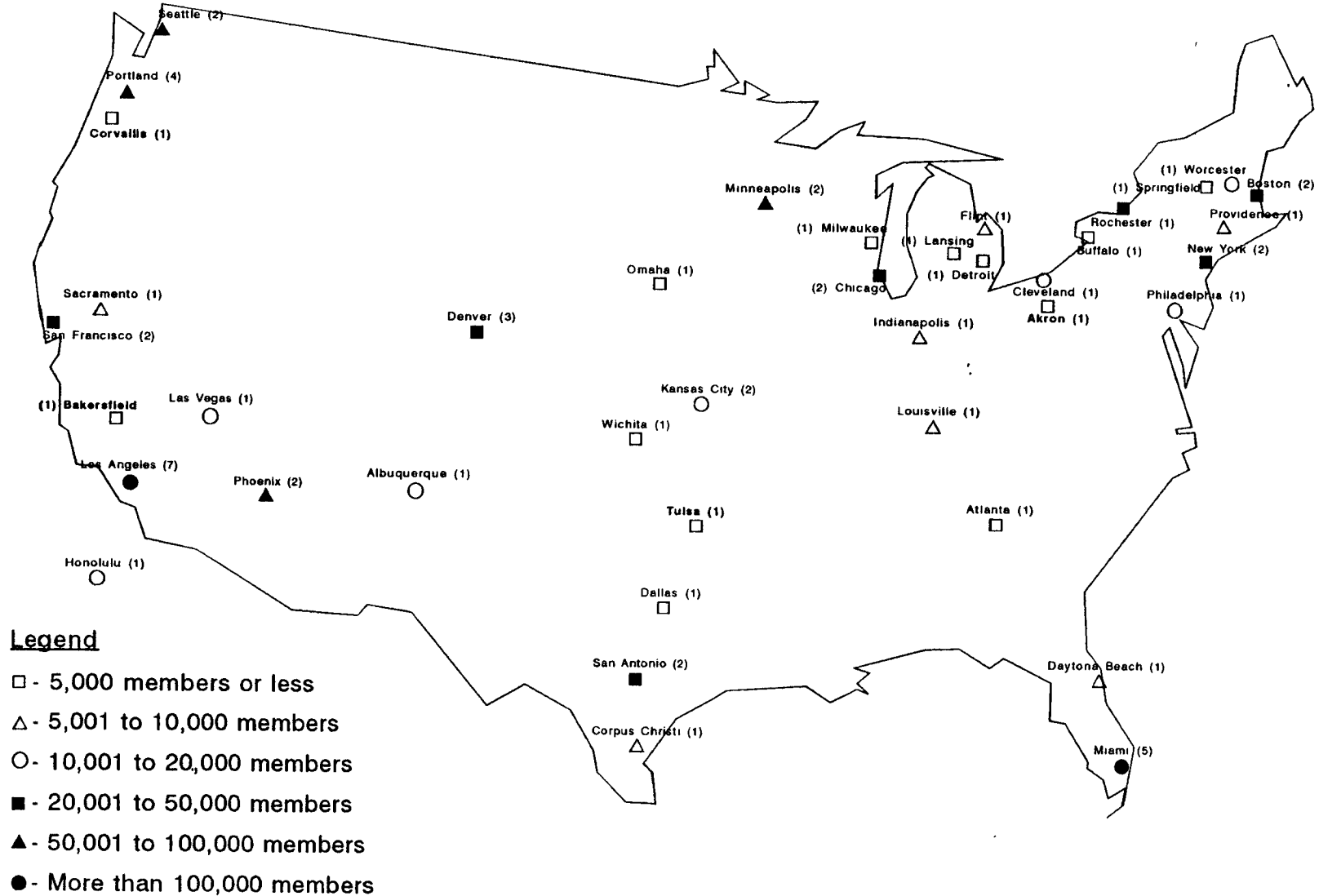
As of June 1992, approximately 1.4 million (3.9 percent) of the estimated 35.5 million Medicare beneficiaries in the United States were enrolled in the 83 active Medicare risk plans. The number of enrollees has increased steadily each year since 1985, but the number of active participating risk plans has dropped to 83 from the peak of 134 in January 1987. About 70 percent of the total enrollment is concentrated in the 15 plans with over 20,000 members. The three largest plans alone--two serving the Los Angeles area and one serving Miami--account for over one-third of the total program enrollment. The participating plans serve 40 different metropolitan areas across 28 states, giving about half of the Medicare population in the United States an opportunity to enroll in a Medicare risk HMO. Figure 1 displays the geographic distribution of risk plans and enrollees.

The Structure, Organization, and Features of Risk Plans Differ Considerably

Risk plans differ from each other along several important organizational dimensions, including the relationship between the HMO and its physicians, whether the plan is for-profit, and whether it is affiliated with a chain or is strictly local. According to HCFA's classifications, 57 percent of participating HMOs are "independent practice associations" (IPAs), an arrangement in which individual physicians contract with the HMO to serve the HMO's patients but also continue to see non-HMO patients and to operate out of their own offices. IPAs generally have fewer Medicare members than other types of risk plans. About 27 percent of plans are "group model" HMOs, in which the HMO contracts with a physician group to provide services, and 16 percent are "staff model" HMOs, in which physicians are employed by the HMO and paid a salary. For-profit HMOs comprise 58 percent of the Medicare risk plans, and just over half are affiliated with chains.

FIGURE 1

AREAS IN WHICH MEDICARE RISK PLANS OPERATE, AND LEVELS OF ENROLLMENT, JANUARY 1992



Note: In a few instances, a single risk contract will encompass enrollees in more than one area (e.g., Miami and Tampa; Los Angeles and San Diego). In these cases, the enrollment for the entire plan is attributed to the market area of largest enrollment.

The number of plans in the market area is shown in parentheses.

The Medicare risk plans serve primarily urban areas, but the service area of nearly one-fourth includes at least one adjacent rural county. As of 1991, only one risk plan served an exclusively rural area. Over half of the HMOs that have risk plans and offer commercial coverage to rural residents through contracts with employers limit their Medicare risk plan to residents of the urban counties. because AAPCC rates for rural counties are typically far lower than the rates for adjacent urban counties.

In 1992, the premiums that risk plans charged beneficiaries were well below many of those charged by medigap insurers, ranging from zero (about one-fifth of the plans) to \$97, and many of the plans covered a wide range of services that are not covered by Medicare. Virtually all risk plans covered preventive care, and 82 percent covered eye care, but only one-third covered prescription drugs. The proportion of plans offering coverage for drugs has dropped markedly from the early days of the risk program (1986) as plans grew increasingly concerned about adverse selection and sought to lower their costs. The median premium has increased by 14 percent per year on average since 1986.

DO HMOs SAVE MONEY FOR MEDICARE?

By design, the risk program should lower costs to HCFA by 5 percent relative to what HCFA would have paid in FFS reimbursements, because the HMOs are paid only 95 percent of the AAPCC. However, if those who enroll in risk plans are not a representative mix of Medicare beneficiaries (after the risk adjustment factors are accounted for), HCFA payments based on the AAPCC may not be a particularly accurate estimate of what FFS reimbursements would have been for this group. This potential problem exists even if the AAPCC methodology forecasts average costs for those in the FFS sector perfectly. In particular, if enrollees are healthier on average than other beneficiaries (that is, if the HMOs experience "favorable selection"), the program will save less than the intended 5 percent and may actually increase costs to HCFA. If HMOs experience "adverse selection," HCFA will save more than the 5 percent, but risk plans may lose money and drop out of the program. The evaluation measured the extent of favorable or adverse selection and estimated the effects of the risk program on costs to HCFA.

Risk Plans Attract Healthier-Than-Average Beneficiaries

Risk plan enrollees had substantially lower Medicare reimbursements during the two years prior to enrollment than did nonenrollees over a comparable time period, even after controlling for differences between the two groups on the demographic risk factors incorporated in the AAPCC payment mechanism. Prior reimbursements for a sample of nearly 100,000 new enrollees in 1987 and 1988 were about 20 percent lower overall than the risk-adjusted reimbursements for nonenrollees from the same market areas. About two-thirds of the 98 risk plans examined experienced clearly favorable selection according to this measure, and the other one-third experienced slightly favorable or neutral selection; none of the plans experienced adverse selection. Similar results were obtained from a comparison of the two groups of beneficiaries on the proportion having a prior hospital stay for conditions that are associated with high costs in subsequent years.

Enrollees also had fewer functional disabilities and other indicators of chronic health problems than nonenrollees, were less likely to rate their health as poor, and expressed less inclination to use health care services when they were not feeling well. Even after controlling for enrollee-nonenrollee differences in health status that could be due to differences between the groups on factors accounted

for by the AAPCC payment mechanism (enrollees were much less likely to be over 80 years old, to be on Medicaid, to be in institutions, or to be Medicare-entitled because of disability rather than age), enrollees are 15 to 30 percent less likely than nonenrollees to exhibit various health problems. For example, 27 percent of enrollees have a history of cancer, heart disease, or strokes, compared to 32 percent of nonenrollees (a 16 percent lower rate of incidence), even after adjusting for the demographic risk factors. These findings were obtained from a 1990 survey of over 6,400 randomly selected enrollees from 75 risk plans and a comparable number of nonenrollees from the same market areas. The sample was drawn from the full set of enrollees, unlike the prior-use analysis samples, thereby providing a more representative picture of the risk program as it matured.

The differences between enrollees and nonenrollees appear to be due primarily to the self-selection of enrollees, since HMOs must enroll any interested Medicare beneficiary. Beneficiaries with chronic health problems are less likely than those in good health to change doctors or give up their freedom to use the primary care physicians, specialists, and hospitals of their choice.

The Risk Program Increases Estimated Costs to HCFA by 5.7 Percent

We estimate that HCFA paid HMOs approximately 5.7 percent more than ~~would it~~ have spent for FFS care for enrolled individuals, primarily as a result of the favorable selection into Medicare risk plans. While HCFA paid HMOs 95 percent of the AAPCC estimate of what FFS costs would have been, our estimates of these FFS costs for the survey sample of enrollees were only 90 percent of the AAPCC projection. We obtained the estimated FFS costs by inserting data on various characteristics for enrollees in the survey sample (demographic risk factors, health status, access to care, attitudes, and socioeconomic traits) into a Medicare reimbursements equation estimated for the nonenrollees in the survey sample to project what FFS reimbursements would have been for the enrollees. We used a similar approach based only on the AAPCC demographic risk factors to project the AAPCC payment that would prevail if it predicted FFS costs perfectly on average for the nonenrollees in each market area. The estimated effect is significantly different from zero at the .01 level, and the 95 percent confidence interval for the estimated increase in cost to HCFA due to the risk program is 2.4 to 9.1 percent. Our estimates indicate that Medicare Part A costs (for hospital, skilled nursing facility, and home health care) increased by 8.5 percent; Part B costs (for physician services, laboratory tests, and X-rays) increased only by 2.7 percent.

The difference between projected AAPCC payments and projected FFS costs for enrollees were due almost entirely to enrollee-nonenrollee differences in health status measures that were not fully captured by the demographic risk factors--that is, age, sex, nursing-home residence, Medicaid eligibility, reason for entitlement, and county of residence. Differences in self-ratings of health, the ability to perform routine daily activities without assistance, and a history of serious illness (cancer, heart disease, or stroke) accounted for 83 percent of the difference between the projected AAPCC payment and the projected FFS costs of enrollees. The history of serious illness indicator alone accounted for 38 of the 83 percent. Differences in attitudes toward health and health care accounted for 14 percent of the difference, and socioeconomic factors and access to care accounted for the remaining 3 percent.

Cost increases for HCFA were greatest for enrollees in (1) the areas whose AAPCCs were highest, (2) HMOs that did not charge a premium, and (3) staff model plans. Costs to HCFA for enrollees in plans that did not charge a premium were over 8.3 percent higher than FFS costs would have been, whereas costs increased only by 2 percent for enrollees in plans that charged beneficiaries \$50 or more per month. *Thus, although costs to HCFA have increased, the program requirement that*

excess payments be used to lower premiums or increase benefits to beneficiaries is clearly working as intended. The greater estimated cost increases to HCFA in areas whose AAPCC rates are high indicates that selection into risk plans is more favorable in such areas. Our estimates, because of the way they are constructed, are driven only by observable differences in the characteristics of enrollees and nonenrollees, and do not reflect any additional effects on costs that would arise from errors in the AAPCC in predicting average FFS costs for a given county or market area, nor do they reflect differences in inefficiency across areas.

DO HMOs REDUCE THE UTILIZATION OF MEDICARE-COVERED SERVICES?

The premise of the Medicare risk program is that HMOs can prosper while providing Medicare coverage for less money than the FFS sector, primarily by reducing unnecessary service use and inefficiency in the delivery of health care resources. HMOs are believed to achieve most of their savings by reducing hospital use, presumably by substituting less expensive types of care, including ambulatory care, home health visits, and nursing-home care, and by practicing preventive care.

The structure of HMOs enables them to respond to the incentives to provide health care more efficiently. Because they are responsible for providing the full range of services to enrolled members, HMOs can coordinate their care, eliminating duplicative services. HMOs can also select physicians who practice medicine in a cost-effective manner and are willing to cooperate with the HMO in finding ways to manage utilization; too, HMOs can provide support services and practice guidelines that will increase efficiency. Moreover, by emphasizing preventive care, HMOs may identify health problems before they become serious and their treatment more expensive. Furthermore, unlike providers in the FFS sector, HMOs are not bound by Medicare regulations that limit the situations in which certain types of care are covered (for example, that skilled nursing facility care be covered only after the patient has spent at least 3 days in a hospital, or that all home health care be supervised by a registered nurse).

According to several studies, these incentives and mechanisms substantially reduce the service use of nonaged HMO members. Recent studies by Manning et al. (1984) and Dowd (1991) confirm the estimates of earlier studies (reviewed by Luft, 1981) that HMOs reduce hospital use by 10 to 40 percent, with some studies indicating a reduction in admissions and others a reduction in the average length of hospital stays (for example, see Stern et al., 1989).

We estimated the impact of the risk program on the utilization of hospital services, skilled nursing facilities, home health care, and physician visits by comparing the service use reported by enrollees and nonenrollees on the survey for the year prior to the interview, controlling for differences in health status measures, attitudes toward health care, and demographic variables.

HMOs Reduce the Number of Hospital Days and Average Length of Stay, But Not Admissions

HMOs reduced the number of days spent in the hospital by 16.7 percent relative to what enrollees would have used under FFS care, but did not affect the number of hospital admissions. They reduced the average length of hospital stays by 1.5 days (16.8 percent). The conclusion that HMOs reduce hospital days by shortening stays rather than by reducing admissions is contrary to expectations generated by some previous studies, and is especially surprising given that Medicare's Prospective Payment System (PPS), implemented in 1983, provides a similar incentive for hospitals to reduce lengths of stay among FFS patients. (Under PPS, hospitals are paid a fixed, predetermined

amount based on the patient's diagnosis.) However, our findings are supported by our independent analysis of the quality of inpatient care (described later), which showed that lengths of stay among two groups of HMO patients with particular conditions (colon cancer and stroke) were 18 to 23 percent shorter on average than lengths of stay among FFS patients with the same conditions in the same metropolitan areas. Further support for these findings comes from an evaluation case study which indicated that, to shorten hospital stays, many successful risk plans use "case management"--preadmission planning for each patient by a specially trained nurse, together with the patient's physician, to determine how long the patient should be in the hospital, identify the type of postdischarge care they are likely to require, and arrange for the necessary postdischarge care well in advance to ensure that it is available when necessary. The lack of an effect on admission rates suggests that few hospital stays for the elderly now are discretionary, and that FFS providers are using new technologies to treat individuals as outpatients. Hospital admissions per 1,000 aged Medicare beneficiaries in the FFS sector declined by 25 percent between 1985 and 1989, indicating that there may be much less opportunity than once existed for HMOs to save money by reducing hospital admissions.

Medicare Risk Plans *Increase* the Likelihood That Beneficiaries Receive Some Services, but Reduce Their Intensity or Frequency

Medicare risk plans *increased* the likelihood that beneficiaries had at least one visit to a physician during the year (from 84 to 89 percent), but slightly reduced the likelihood that they had one or more visits per month on average (from 14 to 12.5 percent). HMOs also increased the likelihood that beneficiaries had a physical exam (by 6 percent), consistent with the emphasis of HMOs on (and their coverage of) preventive care. However, plans had no effect on the average *number* of visits per beneficiary in the month preceding the interview. This absence of an effect on number of visits reflects the competing HMO incentives to reduce the number of visits per patient in order to control costs, while encouraging patients to obtain routine preventive care in order to reduce the need for more expensive services later.

Similarly, risk plans increased by a large proportion (but a small absolute amount) the likelihood of a beneficiary's receiving care in a skilled nursing facility, but did not increase the total number of SNF days relative to what would have existed under FFS care. These estimates are consistent with the expectation that HMOs may shorten hospital stays by substituting SNF care for more expensive hospital days, an expectation supported by our findings for stroke patients that HMO members are discharged sooner and to less intensive types of care arrangements (SNFs instead of rehabilitation hospitals) than FFS patients. However, HMOs appeared to reduce the intensity of use, since there was no effect on the total number of SNF days despite the increase in SNF admissions.

HMOs had no effect on the proportion of individuals with some home health care utilization, but they reduced the number of home health *visits* by 50 percent. Again, HMOs do not limit initial access to services, but control costs by reducing the intensity of the service rendered. HMOs reduced visits by registered nurses (for nursing care and physical therapy) and visits by home health aides (for assistance with personal care).

The Effects Are Greater for Patients with the Most Serious Health Problems

HMOs increased the use of some services by beneficiaries whose health was poorest, but reduced the *intensity* of services more for this group than for other beneficiaries. For example, although

HMOs had no effect on hospital admissions overall, they increased the probability of admission for enrollees in poor health and those with functional impairments. On the other hand, the largest HMO reductions in hospital days and home health visits were associated with beneficiaries who were in poor health, had ADL impairments, or died within 9 months after the interview. Our results for quality of care (reviewed below) suggest that these reductions are more likely to be due to elimination of unnecessary services or substitution of other types of care than to restrictions on access to needed care.

Reductions in Utilization Are Greatest for IPA and Group Model Plans, Plans in High AAPCC Areas, and Plans Whose Premiums Are Low or Modest

Staff model plans, plans that charged high premiums, and plans in low AAPCC areas were less successful than other risk plans at controlling utilization. Staff model plans, which pay physicians a salary and do not expose them to financial risk, were unable to reduce hospital days and home health visits, in contrast to the sizeable reductions achieved by IPAs and group plans. Staff plans also increased the number of physician visits substantially, unlike the other model types. The much larger reductions in hospital days per 1,000 members by HMOs in high AAPCC areas suggests that, not surprisingly, FFS hospital use in these areas may be especially inefficient. Finally, the HMOs that charged 1990 monthly premiums of \$50 or more were unable to reduce hospital use or home health use and showed an increase in physician visits relative to the FFS sector, suggesting that their utilization management practices or incentives did not yield more efficient medical practices than FFS. and therefore did not enable these HMOs to provide coverage for rates substantially below medigap.

Medicare Risk Plans May Spend About 10 Percent Less than HCFA Would Spend for all Medical Services

The combined HMO effects on hospital, physician, home health, and SNF use suggest that HMOs may have spent about 10.5 percent less for all Medicare-covered services combined than the amount that HCFA would have spent in reimbursements to FFS providers. This estimate, a weighted average of the proportionate HMO effects on the four types of services examined (with weights equal to the share of that service in total projected Medicare reimbursements for enrollees), has no bearing on whether the risk program affects the costs to HCFA, since payments to HMOs are predetermined by the AAPCC and are unaffected by the HMOs' actual resource use. However, the estimate does imply that the *potential* for cost savings to HCFA may exist. That is, the reduction in medical resources consumed is reasonably large (due almost entirely to the 17 percent reduction in hospital days), and may be sufficient to allow HMOs to cover their administrative costs, even if their AAPCC payments were reduced. However, this estimate is quite rough, since the marginal service use eliminated by HMOs may not be as expensive as that which could not be eliminated (for example, the last days of a hospital stay may be less resource-intensive), thus lowering the amount of potential savings. On the other hand, since we find that HMO members receive fewer tests and are more likely than FFS patients to be treated by primary care physicians rather than by specialists, the difference between AAPCC payments and the amount paid by the HMO for medical services may exceed the 10.5 percent estimate. Furthermore, HMOs may negotiate more favorable rates for services than are paid by Medicare.

HOW DOES THE QUALITY OF CARE PROVIDED BY MEDICARE HMOs COMPARE WITH THE QUALITY OF CARE IN THE FFS SECTOR?

The quality of care delivered by HMOs may be better or worse than that rendered by FFS providers. In responding to the financial incentives to provide care more efficiently, HMOs may restrict services too much, leading to poorer-quality care. The efforts to economize can also lead to poorer care if the HMOs' physicians, other service providers, or facilities are inferior to those in the FFS sector.- On the other hand, the features that distinguish HMOs from FFS providers--the coordination of care, the emphasis on preventive care, and lower out-of-pocket costs to members--can lead to higher-quality care for enrollees.

We assessed the impacts of risk plans on the quality of care by (1) comparing the services received by HMO and FFS patients who were hospitalized for colon cancer or stroke, and their outcomes, (2) comparing the ambulatory care received by HMO and FFS patients for three chronic problems (joint pain, urinary incontinence, and recurring chest pain), and (3) comparing the satisfaction of HMO enrollees and nonenrollees with various aspects of the care they received. We assessed the effects on the quality of care separately for stroke and colon cancer patients by comparing the treatments received by a sample of about 400 HMO patients (from 19 HMOs) with those received by an equal number of comparable FFS patients at hospitals serving the same counties as did the HMOs; the data for this analysis were abstracted from the records of 154 hospitals. Data for analyzing the effects on access to care and satisfaction with care came from the same survey of beneficiaries that we used to estimate effects on cost and utilization. Statistical models were used to control for differences between the enrollees and nonenrollees that could create differences in access or satisfaction that were not due to the influence of the HMO.

HMOs Produce Similar Outcomes for Inpatients, Using Fewer Resources

The rates of death, readmission to the hospital, and postadmission complications among HMO and FFS patients were similar, indicating no differences in outcomes. Furthermore, HMOs achieved these outcomes with significantly lower use of various procedures, tests, or services. HMOs reduced the length of hospital stays by 23 percent among colon cancer patients and by 18 percent among

Outcomes	Stroke Patients			Colon Cancer Patients		
	Enrollees	Nonenrollees	Impact	Enrollees	Nonenrollees	Impact
Percent Readmitted within:						
31 days after discharge	9.3 %	12.4 %	-3.1 %	7.6 %	7.9 %	-0.3 %
61 days after discharge	14.4	14.9	-0.5	11.6	12.2	-0.6
91 days after discharge	17.3	17.2	0.1	15.2	14.8	0.4
In-Hospital Deaths (%)	12.2	14.7	-2.5	3.4	4.8	-1.4

stroke patients, consistent with the 17 percent shorter lengths of stay observed overall among the survey sample (which did not control for diagnosis). HMO members also spent about one-third less time in intensive care units on average for both conditions. In addition, HMOs substantially reduced the use of various laboratory tests and procedures that appeared to be discretionary, such as multiple CAT scans and EEGs for stroke patients.

Although the similarity of outcomes suggests no major differences in the quality of care, a few differences do indicate that HMOs may be providing less adequate care in some situations. The most striking evidence for this inference was the significantly shorter distance between the tumor and the margin of resection (the portion of the colon that was removed) for HMO patients, for whom the *average* distance was approximately equal to the minimum recommended by some specialists. However, various other indicators of the quality of surgical care revealed no differences between the two sectors—for example, the amount of colon removed, the amount of blood lost during surgery, and the average number of lymph nodes removed. HMO stroke patients received significantly less physical therapy while in the hospital and had greater motor and speech deficits at discharge, yet were not more likely to have postdischarge speech or physical therapy planned. This pattern suggests that HMOs may skimp on rehabilitative care; on the other hand, HMO patients were discharged sooner and may well have recovered an equivalent level of functioning with the passage of an equivalent number of days after the date of admission. Finally, although HMO patients were not more likely to have postadmission complications, and though the responses of HMOs to complications were similar in most cases, HMOs were less likely than FFS providers to give chest X-rays to colon cancer patients who experienced postoperative fevers (a review of the literature indicates X-rays are called for in 80 to 100 percent of such patients). HMOs also administered preoperative antibiotics less frequently than did FFS providers. Such precaution is recommended for all colon surgery patients by the American Society of Hospital Pharmacists as protection against wound infections; but this difference between enrollees and nonenrollees did not produce a higher incidence of postoperative fevers among enrollees in our sample. Thus, while there is no evidence that these various differences in care led to poorer outcomes for patients, they cause some concern due to their potential adverse effect on outcomes.

In addition to providing less resource-intensive care while the patient is in the hospital, HMOs also discharged both stroke and colon cancer patients to lower-cost settings than did FFS providers. For stroke patients, HMOs discharged a higher proportion to nursing homes and a lower proportion, to rehabilitation hospitals, which tend to be substantially more expensive and provide more extensive rehabilitative services than nursing homes. For colon cancer patients, HMOs discharged patients to their homes more often and to nursing homes or rehabilitation hospitals less often. We have no follow-up data on the quality of life or recovery time for either group of patients, so it is not possible to determine whether these differences in post-hospital care are evidence of greater cost-effectiveness or of poorer care by HMOs. We know only that these differences did not affect the rates of readmission to the hospital for patients with either condition.

HMOs Provide Comparable Access to Ambulatory Care and Produce Similar Patient Outcomes With Less Intensive Use of Resources

We observed no consistent pattern of differences between HMO and FFS patients in the likelihood of receiving medical attention for the three common, chronic problems of the elderly that were examined, but HMOs do consistently use resources less intensively. HMO members and FFS beneficiaries were equally likely to have experienced each of the three health problems—joint pain, chest pain, and urinary incontinence. While there were differences between the two groups in the proportion receiving medical attention, the differences ranged from HMO members being significantly *more* likely than nonenrollees to receive care for their joint pain, equally likely to receive care for incontinence, and significantly *less* likely to receive care for chest pains. Further investigation of the HMO patients with chest pain who did not see a doctor revealed that none of these individuals had sought care. This absence of evidence of differences in access to care contrasts markedly with the *sizeable* differences in the type and quantity of resources used in their treatment. For each of these

conditions, HMO members were less likely than FFS patients to see a specialist, less likely to have a follow-up visit scheduled, and less likely to have their progress monitored. HMOs also administered X-rays less often (but only for patients with urinary incontinence). However, HMOs prescribed medication more often for patients with joint pain than did FFS providers. No differences were observed in prescribed treatments or use of specific diagnostic tests.

As we found for inpatient care, ambulatory outcomes were quite similar for HMO and FFS patients despite the lower use of resources expended by HMOs. The estimated effect of HMOs on the likelihood that the patient was symptom-free at the time of the interview was not statistically significant for any of the three conditions.

	Joint Pain		Urinary Incontinence		Chest Pain	
Symptom Response	HMO	FFS	HMO	FFS	HMO	FFS
No Longer Experiencing Problem	22.7 %	22.1 %	46.6 %	51.2 %	43.7 %	45.1 %
Symptoms Improved (for those still experiencing problem)	29.3 % *	36.5 % **	35.6 %	29.2 %	39.3 %	44.4 %
Sample Size	2,243	2,009	946	764	556	524

**Estimated HMO effect is significantly different from zero.

Of those who were still experiencing joint pain, HMO patients were less likely than FFS patients to indicate that their symptoms had improved; no such difference was observed among patients still experiencing urinary incontinence or chest pain. Taken together, these six outcome measures suggest that the ambulatory care received by HMO patients is of comparable quality to that received by FFS patients. The lower level of services rendered appears to be due to the elimination of discretionary services.

HMO Enrollees Are Somewhat Less Satisfied than Nonenrollees with Their Care, but Are More Satisfied with Costs and Have Broader Benefit Coverage

Over 90 percent of both HMO enrollees and FFS beneficiaries rated various dimensions of their care as “good” or “excellent,” but on virtually every dimension examined except cost, enrollees were significantly less likely than nonenrollees to rate their care as “excellent.” Enrollees were less likely to rate their level of satisfaction as excellent for measures of the process of care (for example, explanations given by their physicians, or the attention they received as a patient), the structure of care (the ease of obtaining care, waiting times, and the ease of seeing the physician of their choice), and the perceived quality and outcomes of care (the thoroughness of examinations, and the overall results of care received). On the other hand, enrollees were much more likely to rate their satisfaction with out-of-pocket costs as excellent and identified significantly fewer instances of needing health care (of various types) for which they did not have coverage.

Another rough indicator of satisfaction--the proportion of enrollees who left the risk program within the first year of enrollment--suggests that a sizeable proportion of new enrollees are not satisfied. Twenty percent of beneficiaries who joined a risk plan disenrolled within 12 months after joining, although the rates varied widely across risk plans. Some rough evidence from the Medicare Competition Demonstration plans suggests that disenrollment rates among enrollees in their first year

were particularly high in those plans that contained a higher-than-average proportion of new beneficiaries who were dissatisfied with the professional competence of their physicians.

Enrollees appeared to feel that the lower costs and wider set of benefits offered by the HMO more than compensated for their lower level of satisfaction. About 93 percent of HMO enrollees indicated that they would recommend their HMO to a friend or relative.

HOW DOES MEDICARE RISK CONTRACTING AFFECT HMOs?

If the Medicare risk program is to be successful in the long run, it must not only ultimately save money for HCFA and ensure that adequate care is provided, but also be sufficiently attractive financially to HMOs. Our results on resource use suggest that HMOs are successful at reducing utilization relative to the Medicare FFS sector, and our findings on favorable selection and costs show that HMOs are paid more than what HCFA would have paid for enrollees under FFS coverage. However, these results do not ensure that the premium revenue received from HCFA and beneficiaries is sufficient to cover the direct and indirect costs of HMOs to provide services to Medicare members under a risk contract.

Because HMOs have the incentive and structure necessary to provide health care efficiently, they were expected to make money or at least to break even in the risk program, despite receiving what was intended to be 5 percent less than what FFS providers would have been paid. These incentives and structure are absent in the FFS sector. Nonetheless, a substantial proportion (17 to 28 percent) of Medicare risk plans (primarily quite small plans) dropped out of the program during three successive years (1988, 1989, and 1990) by declining to renew their risk contract. Nonrenewing plans almost universally cited financial losses as the reason for leaving the program, and almost no new plans entered the risk program during these years. While these trends have abated and the number of risk plans has remained fairly constant for the past two years, many plans still complain about the difficulty of covering their costs under the program and indicate that they may soon leave the program.

Three studies were conducted under this evaluation to determine the proportion and types of risk plans that are having financial difficulties and the reasons for their problems. One study (Shin and Brown, 1992) used financial data submitted by HMOs for their entire operation for 1987, 1988, and 1989, together with the HMOs' estimates of the relative costs of serving their Medicare and non-Medicare members, to estimate the profits or losses on their Medicare risk plan. McGee and Brown (1991) used data on renewal decisions for years 1987 through 1990 to determine the types of risk plans that were most likely to drop out of the program at some point. Nonrenewing plans for 1989 and 1990 were also interviewed to obtain additional insights. Finally, in early 1991, Bergeron and Brown (1992) interviewed executives from 20 risk plans with at least 3 years of experience and 5,000 or more enrollees in 1990 to determine the factors that enable some to be financially successful but not others, and why the unsuccessful plans have such different experience with their Medicare plan than with their commercial plans for the nonaged.

About One-Half of Risk Plans Appear To Be Profitable

We estimate that about one-half of the risk plans (among those that contained at least 1,000 enrollees) had positive net revenues during the 1987 to 1989 period, and nearly half (44 percent) of the 117 that contained 1,000 or more members at some point between 1987 and 1990 had

discontinued their risk contract by 1991. Median net revenues for the set of Medicare risk plans with useable data were about -\$3 to -\$4 per member month, or about -1 percent of costs. Profit rates for the overall operations of these HMOs were slightly better on average, but similar--about 57 percent reported overall profits, compared with 48 percent estimated to be earning profits on their risk plans. and the median overall profit rate was 0.4 percent. However, the largest difference was the much greater volatility of profit rates for risk plans. Whereas few HMOs (less than 8 percent) lost more than 10 percent on their costs overall, 16 percent lost this much on their risk plan, and HMOs were also much more likely to be earning 10 percent or more on their risk plan than on their overall operations.

Among plans that had 1,000 or more members, about 3 of every 10 nonrenewing plans converted to a different form of contract (cost or health care prepayment plan) under which the HMO bore little or no risk of losing money (and had little or no opportunity to make money); others discontinued service to Medicare beneficiaries entirely or offered a medigap policy. The proportion of all HMOs with risk contracts that discontinued their contracts during the 1987 to 1990 period (57. percent) was much larger than the 44 percent nonrenewal rate for plans with 1,000 or more enrollees. Many of these plans never enrolled beneficiaries.

Risk Plan Success Varies According to AAPCC Rates, Favorable Selection, and the Ability of the HMO To Control Hospital Use

The three factors that seem to be the strongest determinants of financial success as measured by either profit rates or risk contract renewals are a relatively high AAPCC rate, highly favorable selection, and the ability to control hospital use. Each of these factors was expected to be important: a high AAPCC rate guarantees high revenues, a low hospital use rate is necessary to hold costs down, and favorable selection implies that the AAPCC payment exceeds the FFS cost of providing services to the stock of enrollees. HMOs with these characteristics were 12 to 19 percentage points more likely to earn profits than those without the characteristics (for example, 58 percent of plans that experienced very favorable selection earned profits, compared with 41 percent of those that experienced less favorable or neutral selection), and were only half as likely to discontinue their risk contract (only 29 percent of plans whose AAPCCs exceeded the national average cost per beneficiary by 25 percent or more discontinued their contract, compared with 61 percent of those whose AAPCC rates were below the national average).

Three other characteristics also seem to be associated with both profit rates and contract renewal: (1) Medicare risk plan members comprise a relatively high proportion (at least 10 or 15 percent) of the HMO's total membership, (2) the risk plan is a for-profit enterprise, and (3) the HMO has a sizeable surplus between the average expected AAPCC payment per member month (APR) and the projected cost per member month (ACR) for basic Medicare services. The relationship between these characteristics and financial success is consistent with expectations. For example, given that Medicare members cost HMOs about 4 times as much per member month as non-Medicare members on average, HMOs in which Medicare beneficiaries account for a relatively high proportion of total membership are likely to devote more resources to modifying their utilization management procedures specifically for their Medicare plan in order to control these costs (Medicare beneficiaries would account for about 30 percent of total HMO costs if they comprised only 10 percent of total membership). It is also not surprising that for-profit plans and low-premium plans are more profitable. For-profit plans have a greater incentive to earn a profit, and plans that charge a low premium tend to be those that are paid more by HCFA than they expect to spend (due to

favorable selection, high AAPCC rates, and perhaps effective utilization management), which requires that they lower premiums.

The type of plan model and other plan characteristics seem to be tied less closely to financial performance. IPAs were much more likely to drop their risk contract than other model types, and large plans were much less likely to discontinue (only 3 plans with over 10,000 Medicare enrollees had discontinued their risk contract by 1991), but no such relationships were found for financial performance.

The case study of risk plans provided support for the primary findings. Risk plans that were for-profit, those whose 1990 AAPCC rates were high (over \$350 per month), those with fewer than 1,820 hospital days per 1,000 members, and those that experienced the most favorable selection were all much more likely to say that their risk plan was profitable. Although a utilization rate of 1.820 hospital days per 1,000 members was about 30 percent below the U.S. average for the FFS sector in 1989 (2,635 days per 1,000 beneficiaries), this does not imply that HMOs had to cut hospital use to 30 percent below what it would have been *for their enrollees* under FFS, because HMO members are younger and healthier.

Plan Executives Cite Various Reasons for the Discrepancy Between the Profitability of Medicare and Commercial Plans

The 7 interviewed HMOs that earned profits on their commercial (employer) accounts but lost money on their Medicare risk plans offered six reasons for their financial problems with Medicare that help explain the disparity between the two lines of business:

- AAPCC rates are too low and variable.
- Utilization rates for services that are used much more frequently by Medicare beneficiaries than by younger HMO members are especially difficult to control.
- Selection into their Medicare risk plan is adverse.
- Competition from medigap insurers and other risk plans forces them to charge premiums that are too low.
- Some state regulations inhibit their ability to prosper.
- Nursing-home beds are in short supply, limiting the ability of HMOs to transfer hospital patients to SNFs.

From the perspective of HMOs, the problem with the AAPCC is that it is determined in a way that has nothing to do with the HMO's actual experience with enrolled members--a very different process from the experience-based methods that HMOs use to set their premiums for their non-Medicare member groups. The disparities across counties within a metropolitan area and the wide fluctuations from year to year in AAPCC rates make the financial performance of risk plans very volatile. Since they feel that they cannot adjust their beneficiary premium or extra benefits as radically as the AAPCC may change. While it is clear that these features of the AAPCC could create

difficulties for **HMOs**, their perception that the AAPCC rates are too low seems dubious for most plans. as does the perception of “adverse” selection. Nonetheless, **HMOs** are certainly more likely to earn a profit if AAPCC rates are high or selection is especially favorable. Furthermore, since Medicare does pay less than private payors for most services, the AAPCC payments from Medicare may not fully cover the **HMOs** costs based on the rates negotiated by the HMO with physicians, hospitals, and other providers for their commercial accounts, prompting some **HMOs** to believe that the AAPCC-rate is inadequate. Several of the other problems cited by **HMOs** as unique to their risk contract--difficulties in controlling utilization, competing with medigap insurers, and finding available home beds--are issues that **HMOs** must address in order to have a successful risk plan. HCFA could help by encouraging states to drop restrictive practices that can inhibit the ability of **HMOs** to prosper, such as requiring that **HMOs** pay hospitals a (state-determined or Medicare-determined) fixed rate for patients with specific diagnoses, rather than allowing the HMO to negotiate a per diem rate that preserves their incentive to shorten lengths of stay. States could also be encouraged to allow the market to determine the appropriate price for medigap policies.

Administrative Costs for **HMOs** are Substantial

One problem that was not cited by **HMOs** but is clearly a drain on HMO profits is administrative expenses for marketing, utilization management, negotiation of contracts with providers, processing claims, quality assurance, complying with HCFA and state requirements, and other costs that are not borne by FFS providers. Our estimates suggest that these expenses are about 13 percent of total costs on average for Medicare risk plans; other estimates suggest that the average rate is about 10 percent of costs. These administrative costs, coupled with the 5 percent reduction in revenue relative to what FFS providers receive, imply that in order to break even, **HMOs** must hold the amount they spend on medical care to at least 15 percent below the amount that Medicare would have spent in FFS reimbursements for enrolled beneficiaries (assuming that the HMO experiences neutral selection and the AAPCC rate they face fairly reflects the average Medicare FFS reimbursement per beneficiary). While risk plans do provide more efficient care than the FFS sector and may negotiate favorable prices with providers, our overall estimates suggest that on average the resource savings may be closer to 10 percent. Thus, absent favorable selection, it may be difficult for risk plans to prosper unless they can limit the average administrative cost per member month.

HOW DOES MEDICARE RISK CONTRACTING INFLUENCE THE BEHAVIOR OF FFS PROVIDERS AND INSURERS THAT SERVE MEDICARE BENEFICIARIES?

One of the possible beneficial effects of the Medicare risk program is that it could indirectly lower Medicare costs and enhance access to care among *all* beneficiaries who reside in the market areas in which **HMOs** operate, whether or not they join an HMO. As **HMOs** increase their share of the Medicare-covered population (the HMO penetration rate) to noticeable levels, the added competition and possible influence on general practice patterns could slow the rate of growth in Medicare reimbursements in the FFS sector. Similarly, the beneficiaries who remain in the FFS sector may benefit if medigap premiums drop in response to competition from Medicare risk plans, which charge lower premiums and provide more extensive coverage than medigap. .

To address these issues, we conducted two studies of the effects of an increase in the proportion of local Medicare beneficiaries who enroll in a Medicare risk plan--one addressing the impacts on the FFS costs to Medicare, and one assessing the effects on medigap premiums. The impacts on FFS costs were estimated on the basis of Medicare claims for 1985 to 1988 for about 100,000 Medicare

beneficiaries in 48 separate market areas with Medicare risk plans. The impacts on medigap premiums were estimated from data on the amount paid by individuals for medigap coverage, obtained from the 1990 survey of nonenrollees. The relationship between these measures and Medicare risk plan penetration rates were estimated with regression models, controlling for the characteristics of the individual and the market area that could affect the outcomes of interest.

The Estimated Effects of Risk Plan Penetration on FFS Reimbursements Depend on the Statistical Model and Have Alternative Interpretations

The estimated effects of risk plan growth on Medicare FFS reimbursements vary widely, some implying that FFS reimbursements are unaffected by HMO penetration and others implying that they fall substantially. One model, similar to that used by Welch (1991) to investigate this same issue with a different data set, yielded estimates which indicated that risk plan penetration had no effect on FFS costs. This finding contrasts markedly with Welch's estimates, which show a statistically significant decline in FFS costs in response to an increase in the risk plan penetration into the Medicare market. An alternative statistical model yields estimates which imply that FFS costs drop by 4 or 5 percent with every 10 percentage point increase in risk plan penetration. This estimated effect is even larger than that obtained by Welch.

The estimates which indicated that risk plan penetration had no effect on FFS costs appear to be much more plausible than those which imply a large or even modest reduction in FFS costs in response to the growth of plans in an area. This conclusion is based on (1) the weakness of the mechanisms by which the growth of risk plan penetration could force FFS costs down and the more plausible and stronger forces that could cause FFS reimbursements to *increase* in response to risk plan growth, and (2) several plausible alternative explanations for why FFS costs may be increasing more slowly than average at the same time that risk plan market penetration is increasing rapidly in an area.

Increased competition from risk plans is not likely to force FFS providers to practice more efficiently or lower their prices for Medicare-covered services, because they have no incentive to do so--neither action will help them retain their patients as the local risk plans enroll an increasingly large proportion of area beneficiaries. We believe that a more plausible outcome is that providers will *increase* the volume of services (and possibly prices) in order to maintain their income as they lose patients to the HMO. The "spillover effects" explanation put forth by Welch--that physicians who treat both HMO and FFS patients will begin to practice the same style of cost-effective care with their FFS patients as they use to treat their HMO patients--seems weak and counterproductive for physicians. Such behavior could limit the FFS income of physicians and may drive away FFS patients who may have chosen not to join the HMO, even though they could retain their physician, because they object to the HMO style of care. Furthermore, such effects would not influence the behavior of the many physicians who are not associated with an HMO, or those who have few HMO patients.

Plausible alternative explanations for why a faster-than-average growth in risk plan penetration rates may coincide with a slower-than-average growth in FFS reimbursements support the view that the estimated large negative relationship is not a reliable estimate of the actual effects of risk plans on FFS reimbursements. We believe that the most likely explanation for our estimates is that HMOs marketed heavily and grew most rapidly in those areas with high AAPCC rates--that is, those in which FFS reimbursements were relatively high in earlier years due to excess utilization. Simultaneously, FFS costs in these areas may have grown more slowly than in other areas due to (1) the effects of Medicare PPS, which reduced FFS hospital use over this time period and are likely to be especially

large in areas of excess utilization, (2) competitive effects on service prices that could have occurred if high reimbursements attracted more providers (for example, SNFs and nurses), and (3) the statistical phenomenon that causes group averages that are abnormally high or low by chance in one period to tend to move closer toward the overall mean in later periods on average. Weaknesses of the data for the study may also contribute to the anomalous estimates, including the small number of market areas with enough penetration to influence FFS costs and the lack of data on HMOs' total market penetration (Medicare and non-Medicare).

Medigap Premiums May Increase Slightly as Risk Plan Penetration Increases

Risk plan penetration appears to create a small but statistically significant increase in medigap premiums. Whereas the expectation was that greater competition from Medicare risk plans would force medigap insurers to charge lower premiums, our estimates for 1990 premiums indicate that every 10 percentage point increase in risk plan penetration rates raises the monthly amount paid by beneficiaries for medigap insurance by about \$2 (about 3 percent of the overall mean of \$60).

The estimated relationship could be due to the favorable selection experienced by HMOs or to competition from risk plans that prompts medigap insurers to offer a richer benefit package, or it may be a statistical anomaly. Since risk plans attract healthier-than-average beneficiaries, those who continue to receive FFS care and purchase medigap policies will have higher FFS reimbursements on average, which could force medigap insurers to raise premiums to cover the higher costs if the HMO penetration rate becomes high enough for the effect to be noticeable. Alternatively, the effect could be due to medigap insurers offering richer benefit packages in areas where risk plan penetration is greatest. On the other hand, the estimated relationship could reflect "reverse causality"--penetration may be higher in some areas *because* medigap premiums are greater there, not because the medigap premiums are responding to penetration. The statistical model linked medigap premiums for 1990 with penetration rates in 1988 to avoid such effects, but reverse effects may still have been present to some extent.

Whether or not medigap premiums increase in response to the market penetration of Medicare risk plans, it appears that competition from risk plans did not exert any significant *downward* pressure on medigap premiums in most of the 44 market areas examined. The reason that no such effects occurred in general is that risk plans tended to charge premiums that are so much lower than medigap premiums that the medigap insurer could not effectively compete with HMOs on the basis of price (one in five risk plans did not charge a premium, and the median premium in 1989 was about \$35, compared with the \$60 average premium paid by those with medigap policies). Thus, medigap insurers appear to have focused their attention on attracting Medicare beneficiaries who for various reasons would not enroll in a Medicare risk plan regardless of how low the premium is, and base their adjustments to premiums on the behavior of other medigap insurers rather than on HMO behavior.

THE IMPLICATIONS OF THE EVALUATION FOR MEDICARE RISK CONTRACTING

The Medicare risk program has increased beneficiaries' range of choices of health care delivery systems, and risk plans do appear to be able to reduce utilization rates without affecting the quality of care, but the primary goal of the risk program--to reduce costs to HCFA--has not been realized. Our estimate of a 5.7 percent increase in costs implies that the \$578 million dollars paid out to HMOs in capitation payments for the month of June 1992 was about \$31 million more than HCFA would have spent in FFS reimbursements for the 2.4 million enrollees. While much of this increase

in costs has been channeled by HMOs into lower out-of-pocket costs and additional benefits for enrolled beneficiaries, the intent of the program was to lower costs to HCFA rather than to subsidize the health care of beneficiaries in selected areas. However, our estimates suggest that the *potential* exists for such cost savings, due to the sizeable reductions in the utilization of hospitals and home health services.

The difficulty is that adjusting the payment mechanism to account for the favorable selection experienced by risk plans will lower the average AAPCC payment to virtually all HMOs, which is likely to reduce profits and discourage HMOs from participating. Half of the risk plans are already losing money, nearly half of the established plans in 1987 through 1990 had discontinued their risk contracts by 1991, and very few new risk contracts have been signed. Furthermore, reductions in AAPCC payments may cause HMOs to increase their premiums, which is likely to slow the rate of growth in enrollment in existing risk plans. Thus, changing the AAPCC in order to save money for HCFA may compromise the objective of offering a managed-care option to more beneficiaries.

Finding a solution that will enable HCFA to at least keep its costs the same while not driving HMOs and beneficiaries out of the risk program is important, because managed care has substantial inherent advantages that should lead to greater efficiency. The incentives in the risk program are structured to minimize costs rather than to maximize revenues, as in the FFS sector. Risk plans also do not have an incentive or opportunity to shift costs to other types of providers, as often occurs in response to a HCFA initiative to control Medicare costs for a particular service. Finally, HMOs are organized to facilitate the coordination of care (which should eliminate redundancies), and their emphasis on preventive care could lead to better long-term outcomes and perhaps lower costs. However, these potential efficiencies will not affect costs to HCFA unless the AAPCC payment mechanism is changed to reflect favorable selection.

Four changes by HCFA could help make the potential cost savings of the risk program a reality for HCFA without driving HMOs away. One change, modifying the AAPCC, must be done to eliminate the cost increases to HCFA. The other changes would help HMOs do what they must do: enroll a sufficient number of beneficiaries to spread their financial risk and fixed costs adequately, bring administrative costs for their Medicare plan under control, and hold set-vice utilization rates down (especially for hospital care). However, the burden is not solely HCFA's; HMOs must also make some changes to increase their likelihood of succeeding in the Medicare market.

Payment Rates Must Be Adjusted To Reflect Health Care Needs More Accurately

Our results suggest that adding one additional factor to the AAPCC rate structure--a history of cancer, heart disease, or stroke--could eliminate the increase in costs to HCFA. Our simulations show that if this change were implemented and the plans were still paid only 95 percent of the revised AAPCC, HCFA would actually save 1.1 percent relative to FFS costs, rather than lose money. This approach is similar to the diagnostic cost group (DCG) method developed by Ash et al. (1986), but is simpler, includes a larger proportion of beneficiaries in the high-cost group (about one-third of Medicare beneficiaries have had cancer, heart disease, or a stroke), and is not limited to the experience of the previous year. Data from HMOs on this or a similar factor would be much easier to verify than would some of the risk factors proposed by others, such as measures of functioning; too, it must be updated only when a beneficiary encounters such a health problem for the first time. This change would induce the greatest reductions in AAPCC payments for the plans for which the cost increases to HCFA are greatest--that is, those that experience the most favorable selection.

However, our estimates suggest that the change would eliminate only the cost increases to HCFA; it would not yield the 5 percent savings originally intended.

Several other changes to the AAPCC could benefit HMOs without increasing costs to HCFA--in particular, standardizing the rate paid within a given metropolitan area, reducing the year-to-year volatility in payment rates, and tying changes in payment rates more to current market factors than to outdated trends. These changes, which have been proposed by ourselves and others over several years, would make payments to risk plans more consistent with their costs for particular members or in a particular year, enable them to plan more effectively, and reduce the volatility of their financial performance on their Medicare plan. These changes should be cost-neutral and relatively easy to implement.

Finally, although the relative accuracy of AAPCC rates for different counties was beyond the scope of our analysis, there is widespread belief in the industry that the rates are much more generous in some market areas than others. Such differences account in part for the fact that risk plans in some areas are able to offer, at no charge to the beneficiary, extensive services beyond what Medicare covers, while in other areas risk plans struggle to survive. Until these disparities are eliminated, there will continue to be great differences across areas in the number, size, and financial success of Medicare risk plans.

Incentives for Greater Enrollment and More Neutral Selection Should Be Increased

Increasing the average enrollment in risk plans, and enrolling a greater proportion of individuals who require the most health care, is perhaps the best way to offset the adverse effects that a better risk adjuster might have on HMO revenues. Having more Medicare members (the median enrollment in 1990 was only 4,733 members) would help HMOs reduce their costs per member month by spreading the large fixed portion of administrative costs over more members and diluting its influence. (Boles (1992) estimates that few HMOs whose administrative costs exceed 10 percent of revenues make a profit overall.) Enrollment growth would also reduce the risk that a few seriously ill members would create overall losses for a risk plan. (A risk plan with 5,000 members that would normally break even has a 12 percent chance of losing 5 percent or more in a given year simply due to the variability of health care costs for beneficiaries.) Encouraging the enrollment of sicker beneficiaries to create a more neutral mix of enrollees would keep AAPCC payments from shrinking as the change was implemented. This change could be especially beneficial in light of the evaluation finding that HMOs achieved their greatest cost reductions for the beneficiaries who normally have the greatest health care use. Thus, implicit HMO profit margins on these individuals should be higher than average.

Two changes could make enrollment more attractive to beneficiaries, including those in poor health: increasing the number of area physicians affiliated with a Medicare risk plan, and increasing the number of employers that provide health care coverage to their retirees through a Medicare risk plan. The proposed reduction in AAPCC payment rates would likely engender higher risk plan premiums for beneficiaries, which will dampen their interest in the program. Increasing the likelihood that beneficiaries could join a Medicare risk plan without changing their physicians would offset this adverse effect substantially, and could create a more neutral mix of enrollees. Various ways to encourage the participation of physicians in HMOs could be devised, including offering some form of incentive to either physicians or HMOs. However, adding physicians who are not necessarily agreeable to managed care concepts will be unattractive to HMOs. Alternatively, HMOs could be offered financial incentives for net increases in enrollments of a given size or percentage. Employers

could be given financial incentives to offer risk plan membership as a health care option for their retirees. All of these incentives that involve payments to physicians, HMOs, or beneficiaries would have to be temporary, in order to avoid further net increases in long-run costs. The intent of the incentives is to help risk plans reach a size at which they can at least break even.

One frequently proposed option for increasing enrollment growth (for example, see *The President's Comprehensive Health Reform Program*, February 1992) that should *not* be adopted is reducing the Part B premium of beneficiaries who enroll in an HMO, because it would be very expensive and probably ineffective. It would be difficult and probably illegal to restrict such benefits to new enrollees; hence, unnecessary Part B premium rebates would be made to 1.4 million current enrollees. Furthermore, since only about 20 percent of Medicare beneficiaries enroll in Medicare risk plans even in areas in which the risk plans do not charge *any* premium (a savings of \$50 to \$100 per month relative to medigap coverage), offering beneficiaries a rebate of \$5 to \$10 per month on their Part B premium is unlikely to attract many new members.

Administrative Burden on Risk Plans Could be Reduced

HCFA could also look for ways to minimize the administrative burden that risk program rules and requirements impose on risk plans. For example, HMOs have long complained that the Peer Review Organization process for assuring quality of care is burdensome on and redundant for them, given their own quality assurance procedures. Mid-year and retroactive changes in benefits are another common complaint of risk plans. Some plans have also complained about having to submit adjusted community rate (ACR) calculations annually. HMOs could be polled for other suggestions that would enable them to reduce the administrative burden associated with their risk plan.

States Should Be Encouraged To Drop Regulations That Limit the Ability of Risk Plans To Minimize Costs

Finally, HCFA could encourage states to eliminate: (1) regulations that require HMOs to pay fixed rates per hospital admission based on diagnosis, which vitiate HMOs' incentive to reduce the length of hospital stays and force them to pay higher effective prices than they might be able to negotiate for hospital care, and (2) regulations that reduce HMOs' ability to impose reasonable levels of financial risk on physicians. Similarly, states could be encouraged to allow the market to determine the appropriate price for medigap policies. Such changes would introduce more competitive pressure into the market, increasing the likelihood that the twofold goal of cost reductions for HCFA and growth in the risk program can be attained.

Some HMOs Must Make Changes to Succeed in the Medicare Market

While certain actions by HCFA can facilitate an HMO's ability to operate a successful risk plan, much of the burden must fall on the HMOs themselves. Many risk plans are simply too small to achieve the stable utilization patterns and low administrative cost per member month needed to plan effectively and operate efficiently. These plans will need to be more aggressive about growth if they expect to prosper under a payment system that would eliminate the benefits of favorable selection. Even larger plans may have high administrative costs that are incompatible with acceptable financial performance--these plans must look for ways to reduce these *fixed* costs.

HMOs can also be more innovative about finding ways to control utilization, especially hospital care. We found (Hurley and Bannick, 1992) that successful risk plans now tend to be proactive rather than reactive in seeking ways to lower utilization, that they try to foster a spirit of cooperation between the HMO and the physicians in co-managing member services, and that they emphasize educating physicians rather than attempting to control their behavior. These HMOs tend to rely heavily on case management of hospital stays to keep them as short as possible, planning strategies for individual patients' treatment and recovery and arranging for needed post-discharge services well in advance. They also are continually seeking ways to improve their performance. Risk plans that find it difficult to control utilization of their Medicare members may wish to explore these approaches and look for other innovative ways involving risk sharing, monitoring, practice guidelines, and other mechanisms to manage the care of their elderly members.

Modest Changes To the Risk Program Could Enable HCFA To Reduce Costs and HMOs To Prosper

The above suggestions for changes by HCFA would clearly require a much more thorough examination of the possible consequences and operational concerns. They are put forth simply to illustrate the point that the potential exists to improve the risk program from the perspective of both HMOs and taxpayers. At present, HMOs in the risk program provide care that is approximately equal in quality to that rendered in the FFS sector, with more extensive benefit coverage, and at a much lower price to beneficiaries than alternative coverage. HMOs successfully reduce utilization by sizeable margins by practicing cost-effective care, and are capable of generating savings that can be shared among beneficiaries, HCFA, and the HMO. Furthermore, although a number of HMOs have left the risk program and others complain of financial difficulties, the nonrenewal rate has declined and a high proportion of plans that have left the program would be interested in re-entering if there were meaningful reform to the payment mechanism. With a carefully planned package of changes by HCFA and continued efforts on the part of HMOs, it appears that the considerable potential of HMOs to deliver Medicare services more efficiently could bring savings to HCFA, beneficiaries, and HMOs.

I. INTRODUCTION

Since the early 1980s, the Health Care Financing Administration (HCFA) has expanded the role of health maintenance organizations (**HMOs**) and competitive medical plans (**CMPs**)¹ within the Medicare program with the hope of saving money for the Medicare program while offering beneficiaries the same choice among health care delivery systems as those under age 65. **HMOs** that sign Medicare risk contracts with HCFA provide Medicare-covered services to voluntarily enrolled Medicare beneficiaries in return for **fixed, prepaid (capitated)** payments from the government. Capitation is an attractive feature to HCFA because it caps the financial liability of Medicare for enrolled beneficiaries and provides an incentive to deliver health care more efficiently; **HMOs** provide an established vehicle for acting on this incentive. However, the savings that the Medicare risk program for **HMOs** is intended to create for HCFA may not materialize if the beneficiaries who choose to enroll in **HMOs** are markedly healthier on average than the typical beneficiary. Furthermore, the financial incentives created by **capitation** to reduce utilization and costs **could** lead to poorer-quality care for enrolled beneficiaries in some circumstances. In addition, in its current form, the Medicare HMO risk program may not be sufficiently attractive to **HMOs** to be viable in the long run. Our four and a half year evaluation of the Medicare risk program addresses these issues and provides evidence that the risk program is achieving some of its goals while not fulfilling its promise in other areas.

A. REASONS FOR INTRODUCING **HMOs** TO THE MEDICARE PROGRAM

HCFA introduced **HMOs** to the Medicare program because the incentives of **HMOs** to control utilization and costs do not exist under Medicare's conventional fee-for-service method of reimbursement. Traditional fee-for-service (FFS) coverage creates incentives for providers to increase

¹We refer to both **HMOs** and **CMPs** as **HMOs** in the remainder of this report. **CMPs** are organizations that are similar to **HMOs** but lack federal qualification.

service use, thus increasing costs to HCFA, whereas **HMOs** create incentives for providers to deliver care only when necessary, and in the most cost-efficient manner possible. The different incentives derive from the payment mechanisms. Under FFS coverage, providers are reimbursed on a **fee-for-service** basis; hence, providers increase their revenue (and profit) by increasing service use. Conversely, **HMOs** are paid a fixed, predetermined amount for each member each month, regardless of the cost or quantity of services rendered. Thus, **HMOs** increase their profit by delivering care more efficiently than FFS providers.

Previous studies have found that **HMOs** are quite effective at controlling the utilization and costs of **nonaged** members. In a review of several studies, Luft (1981) reported that **HMOs** reduce hospital use by 10 to 40 percent among the **nonaged** population, primarily by reducing the rate of hospital admissions. Manning et al. (1984) report that the HMO participating in the Health Insurance Experiment reduced hospitalizations by 40 percent over the FFS plans. More recent studies have confirmed the early evidence of HMO efficiency. Stern et al. (1989) and Bradbury, Golec, and Stearns (1991) report a 14 percent reduction in the average length of hospital stays among HMO members relative to FFS patients. Johnson et al. (1989) found that HMO patients also used significantly fewer resources while in the hospital than **FFS** patients with similar diagnoses. Studies by Winslow et al. (1988) and Kohn et al. (1988), among others, suggest that a substantial fraction of hospital procedures performed are unnecessary, implying that **sizeable** reductions in hospital use are possible without adversely affecting the quality of care.

A primary objective of the Medicare risk program is to extend such efficiencies and coverage opportunities to Medicare, reducing the cost to the government without diminishing the quality of care. Under the Medicare risk program, HCFA expects to reduce its costs for enrolled beneficiaries by paying participating plans a **fixed** amount each month equal to 95 percent of the projected average FFS cost of providing Medicare-covered services to a typical beneficiary (the Adjusted Average per Capita Cost, or AAPCC). In theory, then, HCFA would save 5 percent of the cost that it would have

incurred for providing care to beneficiaries had they not enrolled in risk plans. The expectation was that **HMOs** would still be able to prosper, despite the lower payment, by providing care more efficiently than **FFS** providers. **The** economic incentives faced by the **HMOs** compel them to eliminate unnecessary services, and the structure of **HMOs** enables them to coordinate the health care of their members and achieve these efficiencies. In most **HMOs**, members select a primary-care physician who is responsible for ordering, managing, and monitoring all of the health care that the patient receives. The physician is thus able to eliminate the problem of redundant or conflicting services or drugs being prescribed, and can limit the use of expensive specialists and hospital care to cases for which they are truly necessary. In addition, the volume of business that **HMOs** offer to other health care service providers, such as hospitals and nursing homes, enables **HMOs** to negotiate favorable rates for these services.

A corollary objective of the Medicare risk program is to offer beneficiaries the same range of choices that are available to the population under age 65, increasing competition in the market for health care services to Medicare beneficiaries. **HMOs** have been operating in parts of the country since the 1930s, and have grown rapidly, introducing new competition in the private health care market. The hope was that allowing **HMOs** to compete with physicians and medigap insurers (those offering coverage for Medicare deductibles and coinsurance) would compel these more traditional suppliers of services to be more cost-effective.

B. HISTORY OF MEDICARE RISK CONTRACTING

Beginning with the original Medicare legislation in 1966, HCFA has offered several options to **HMOs** to participate in the Medicare program; however, only since 1980 has it offered options that are appealing to **HMOs**. Early options (group practice plans, now called health care prepayment plans) allowed **HMOs** to contract only for the provision of Part B (physician and other professional medical) services and were cost-based. During the 1970s, the options were changed to allow **HMOs** to enter into either cost- or risk-based contracts with Medicare for both Part A (hospital, skilled

nursing facility, and home health) services and Part B services. However, the risk option was unattractive to **HMOs** because it forced **HMOs** to share any savings with HCFA, and it set a maximum limit on profits but not on losses: In order to identify options that might attract more **HMOs** to the Medicare program, HCFA implemented a series of demonstrations. The first of these demonstrations, the Medicare Capitation Demonstrations, tested various reimbursement models in eight **HMOs** that began operating in 1980 and 1981. Individual plans were reimbursed at rates that ranged from 85 percent to 95 percent of the AAPCC and varied according to several risk-sharing arrangements.

Encouraged by the responses of both **HMOs** and beneficiaries to the initial demonstrations, HCFA authorized the participation of 26 plans in a second demonstration, the Medicare Competition Demonstrations. **HMOs** participating in this demonstration agreed to accept full responsibility and financial risk for providing Medicare benefits to enrollees. For each enrollee, the participating **HMOs** received a prospective monthly payment from HCFA equal to 95 percent of the AAPCC. At a minimum, **HMOs** were required to provide Medicare-covered benefits at no cost to enrollees, although **HMOs** could charge them a premium (and copayments) to cover the Medicare deductible and coinsurance and any additional non-Medicare-covered services included in their benefit package. In this demonstration, **HMOs** were allowed to retain any profits that they generated. A few plans began enrolling beneficiaries in the demonstration in autumn 1982; others began at various times during 1983 and 1984. The demonstration ended in April 1985, when the legislation that authorized the current Medicare risk program (the Tax Equity and Fiscal Responsibility Act) went into effect.

Under the current Medicare risk program, all **HMOs** and **CMPs** are allowed to participate in risk contracting for Medicare beneficiaries, provided that the plans satisfy HCFA requirements. The rules of the program, defined under the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982, are very similar to those of the demonstration, with the exception that participating **HMOs** are not

allowed to earn a higher rate of return on their Medicare risk plan than on their non-Medicare business.

C. THE CURRENT MEDICARE RISK PROGRAM

Enrollment in a Medicare HMO is attractive to many beneficiaries because the HMO offers *full* coverage for services covered by Medicare (that is, they cover the cost of Medicare's normal deductibles and coinsurance) for less than what beneficiaries would have to pay for comparable supplemental coverage from private (medigap) insurers. Enrollment is strictly voluntary; thus, HMOs market the Medicare risk plan to individual beneficiaries, using advertising, open houses, and other promotional methods. Unlike medigap insurers, Medicare risk plans are not permitted to screen beneficiaries according to their health status; any beneficiary who wants to enroll in an HMO's Medicare plan must be accepted. Furthermore, the HMO must charge all of its Medicare enrollees the same monthly premium, regardless of their health status or personal characteristics. Each HMO may set the monthly premium that it charges enrollees as low as it likes, but the **premium** may not exceed the HMO's cost of covering Medicare deductibles and coinsurance plus the cost of any additional benefits covered by the plan beyond those covered by Medicare. HMOs may also charge copayments for office visits and supplemental services. Enrollees must obtain all of their Medicare-covered services from the HMO or from providers authorized by the HMO (else pay for the services out of their own pocket), and must abide by HMO rules for coverage (for example, the HMO may require that members obtain permission from their primary care physician before seeing a specialist). A member may disenroll from the HMO to return to the FFS sector (or join a different Medicare HMO) at any time, with the change in coverage becoming effective on the first **day** of the following month.

From the perspective of HMOs, the risk program offers them an opportunity to enter a new market, but also requires that they behave quite differently than they do in providing coverage to younger individuals through employers. First, as noted earlier, HMOs must market their Medicare

plan to individual beneficiaries, whereas they market their commercial plan to employers, who then offer health care coverage through the HMO as a benefit to all of their employees. Second, the benefits to be covered by the Medicare plan are determined largely by the Medicare program, not through negotiations between an employer and the HMO. Third, the payment received by HMOs for Medicare enrollees is determined in a very different manner from how HMOs establish premiums for their commercial accounts--that is, primarily employee groups. For employee groups, HMO premiums are set to reflect the HMO's anticipated cost for providing services. Premiums will vary according to the benefit package, the HMO's own cost profile, the employee group's demographic profile or prior cost experience (usually), and market competition. In contrast, under the risk program, the HMO has no control over the payments it receives from the government for Medicare-covered benefits, and these payment rates (the AAPCCs) are based exclusively on Medicare costs in the FFS sector, not on the HMO's experience. Actual payments to the HMO vary according to the individual enrollee's county of residence and personal risk factors defined by HCFA--their age, sex, and reason for entitlement to Medicare; whether they reside in a nursing home; and whether they are covered by Medicaid. The HMO has some control over the beneficiary premium that it assesses for benefits above and beyond those covered by Medicare, but even here the HMO is not entirely free to set its premium according to market factors and its own judgment.

HCFA constrains the premium that HMOs are allowed to charge beneficiaries, to ensure that HMOs do not earn excessive profits on their Medicare risk plans. If an HMO's expected profit rate on its Medicare risk plan for the next year exceeds the rate on its non-Medicare business, HCFA requires that the HMO add benefits or reduce monthly premiums to offset the surplus (else return the excess to HCFA). The premium charged to beneficiaries cannot be used to offset any expected losses that the HMO expects to incur on Medicare-covered benefits.

HMOs participating in the Medicare risk program must also comply with other HCFA regulations governing enrollment levels and quality assurance that they do not face in serving

employer groups. **HMOs** must provide patient records on request to comply with **HCFA's** quality assurance program (conducted by Peer Review Organizations), whereas **HMOs** have their own internal mechanisms to ensure an adequate quality of care for their commercial business, and employers tend to impose much more limited, if any, formal mechanisms for ensuring that the quality of care is adequate. **HCFA** also requires that **HMOs** limit their Medicare enrollment to not more than half of their total enrollment.

As of June 1992, 83 **HMOs** were participating in the Medicare risk program, operating in 28 states nationwide and serving almost 1.4 million beneficiaries (about 4 percent of Medicare beneficiaries in the United States). Since the beginning of the first full year of the program, January 1986, the number of beneficiaries enrolled in the program has grown steadily, to nearly three times its 1986 size. However, the number of active plans (those with enrollees), after having grown rapidly from 71 to 134, has fallen by over one-third from that peak. The risk program currently includes a variety of plans whose enrollment size, model type, tax status, chain affiliation, market areas, and other characteristics are quite diverse, as described in Chapter II.

D. EVALUATION OF THE MEDICARE RISK PROGRAM

To determine whether the objectives of the Medicare risk program are being achieved, **HCFA** funded this four-year investigation of its impacts on beneficiaries, the government, and participating plans. In conducting the evaluation, we test for whether such effects exist, estimate the size of these effects, and identify differences in the effects across types of **HMOs** or beneficiaries. The following are the key questions of interest for the evaluation:

- What types of beneficiaries are most likely to join an **HMO**? Do the needs and demands of enrollees for health-care services differ from those of nonenrollees, even after differences in actuarial risk factors are accounted for (that is, does “biased selection” into **HMOs** exist)?
- Does the Medicare risk program lead to higher or lower costs to Medicare than if the enrollee had not joined the **HMO**?

- Do **HMOs** reduce the utilization of services covered by Medicare? Which ones, and by how much?
- How does the quality of care rendered by **HMOs** compare with the care provided in the FFS sector?
- How does the satisfaction of enrollees with care compare with the satisfaction of nonenrollees?
- Do **HMOs** make money under the Medicare risk program? Are some **HMOs** more successful than others, and, if so, why?
- What effects do **HMOs** have on the FFS sector and on Medicare supplemental insurers?

Although most of these issues were examined in the evaluation of the Medicare Competition Demonstrations, those earlier findings may not provide a reliable guide to the effects of the ongoing Medicare risk program. Only a small number of plans participated in the demonstration, and the quality of the data maintained by **HMOs** on enrollees' use of services was poor; thus, several issues could not be addressed adequately. In addition, the effects of a demonstration program may differ from the effects of an ongoing, permanent program.

Estimates of biased selection and the impacts of the risk program on the use and costs of services, on the quality of care, and on beneficiary satisfaction are based on comparisons between enrolled beneficiaries and beneficiaries who do not enroll, but who reside in the areas in which the risk plans are offered. The statistical models used to estimate impacts control for differences in the personal characteristics of the two groups that could influence the outcome measures. Analyses of the effects of the program on the financial performance of **HMOs** and on the marketplace are based on a range of descriptive analyses, case studies, and models of HMO behavior, as described more fully in later chapters.

A wide variety of data sources supported analyses of the evaluation issues. The following were the key sources: (1) a 1990 telephone survey of over 12,700 Medicare beneficiaries, which provided data on the service use, personal characteristics, access to care, and satisfaction of enrollees and nonenrollees; (2) various HCFA documentation and data **files**, which provided data on individual

beneficiaries (enrollment and disenrollment dates, reimbursements for services to beneficiaries, hospital stays, etc.) and on **HMOs** participating in the program (finances, dates of operation, enrollment levels, benefits and premiums, organizational characteristics, etc.); (3) hospital records for certain admissions in 1989, which provided data on the care received by individual beneficiaries; and (4) in-person and telephone interviews **with HMOs** in 1988, 1989, and 1990. Brief descriptions of the data used for particular analyses are provided in later chapters; full discussions are provided in separate technical reports.

E. GUIDE TO THE SUMMARY REPORT

This summary report highlights the findings that have been presented in 17 separate reports or case studies prepared for this evaluation over the past four and a half years. In Chapter II, we describe the program and its evolution, based on our organizational case study and three annual reports on the evaluation. In Chapter III, we review whether the risk program saves money for HCFA, based on analyses of biased selection, enrollment behavior, and cost impacts. In Chapter IV, we present our findings on whether the risk program provides more resource-efficient health care than does the FFS sector, based on our analysis of the impacts on service use. In Chapter V, we present our findings on how the quality of health care provided by **HMOs** compares with that of the FFS sector, based on our analyses of the quality of inpatient care, satisfaction with and access to care, and disenrollment patterns. In Chapter VI, we present our findings on the economic viability of the program for participating plans, based on our analyses of financial performance and the incidence of **HMOs** dropping out of the program, and on the case studies of unsuccessful plans and utilization management. In Chapter VII, we present our findings from three separate reports on other market effects brought about by the Medicare risk program, including how the risk program affects Medicare program costs for beneficiaries who remain in the FFS sector, how it influences medigap premiums, and the extent to which **HMOs** offer coverage to Medicare beneficiaries in rural areas. In Chapter VIII, we discuss the implications of our findings for the Medicare risk program.

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II. MEDICARE AND THE MEDICARE RISK PROGRAM

The Medicare risk program, which was established as a possible method for gaining control over rapidly rising Medicare costs, has changed substantially since its inception, due in part to changes in the overall Medicare program and in part to the natural evolution of the program. Here, we first describe the changes in the Medicare program that led to the interest in introducing HMOs into the Medicare market, and then describe how the risk program has evolved since its inception in 1985. We then describe the current size and composition of the risk program and the characteristics of the beneficiaries who are enrolled in it.

A. CHANGES IN THE MEDICARE PROGRAM THAT INSPIRED AND INFLUENCED THE RISK PROGRAM

Medicare, which went into effect in 1966, provides basic health care benefits to individuals who are age 65 or older and entitled to social security benefits, and to individuals age 18 or older who are permanently disabled and unable to work. The program comprises two components--Part A, which covers inpatient hospital care, skilled nursing facility care, home health care (care from nurses, therapists, and home health aides delivered in the patient's home), and hospice care, and Part B, which covers ambulatory care-physician care (including laboratory tests and X-rays), outpatient care delivered in a hospital, and durable medical equipment. Various deductibles, copayments, and conditions currently apply:

Major Part A Benefits (the beneficiary is responsible for paying a deductible of \$652 as of 1992 for each spell of illness):

- Inpatient hospital care (the beneficiary is responsible for a \$163 copayment for each of the 61st to the 90th days, and a \$326 copayment for each of the 91st to the 150th days)
- Skilled nursing facility (SNF) care (covered only if the beneficiary is admitted to the SNF within 30 days after a three-day or longer hospitalization; the beneficiary is responsible for a copayment of \$81.50 for each of the 21st to the 100th days)

- Hospice care (the beneficiary pays a \$5 copayment for drugs, and 5 percent of the cost of respite care each day)
- Home health care (only on an intermittent or part-time basis; no copayments are required)

Major Part B Benefits (beneficiaries are responsible for paying a monthly premium of \$31.80, a \$100 annual deductible, and a 20 percent copayment):

- Physician, podiatrist, chiropractor, and psychiatrist services
- Outpatient hospital services that are incidental to physician care, such as diagnostic services, ambulatory surgery, and physical, occupational, respiratory, or rehabilitative therapy
- Durable medical equipment, prosthetic devices and braces, trusses, and artificial limbs
- Pap smears and mammograms

The costs of providing coverage for such services exploded during the first 10 to 15 years of the program, leading to intensive efforts to find ways to bring them under control, including the use of **HMOs**. One of these changes, the introduction of the Prospective Payment System (PPS) for hospital care, has had a major effect on **HMOs**. Other recent changes, designed to enhance coverage for beneficiaries, have also affected the **HMOs** participating in the risk program.

1. Rising Reimbursements Prompted HCFA's Interest in HMOs

A rapid rise in total reimbursements and reimbursements per beneficiary precipitated HCFA's interest in **HMOs** and other methods of cost containment. The average reimbursement per Medicare beneficiary more **than quadrupled** between **1968** (the first full calendar year for which data are available) and 1980 (two years prior to the legislation that established Medicare risk plans), from \$287 to \$1,254--a 13.1 percent increase per year, and a rate of increase that was about **twice** that of the consumer price index (CPI) over this period (Table 11.1). Furthermore, enrollment in the Medicare program increased from 20 million to over 28 million (44 percent) between 1968 and 1980 (about

TABLE II.1

CHANGES IN MEDICARE ENROLLMENT AND REIMBURSEMENTS, 1968 TO 1980

Year	Total Enrollment	Total Reimbursement (millions of dollars)	Reimbursement per Beneficiary	Consumer Price Index
1968	19,821,000	\$5,697	\$287	34.8
1974	24,201,000	\$12,418	\$513	49.3
1980	28,478,000	\$35,699	\$1,254	82.4
Total Percentage Change, 1968-1980	43.7%	526.6%	336.8%	136.8%
Average Annual Percentage Change				
1968-1974	3.4%	13.9%	10.2%	6.0%
1974-1980	2.7%	19.2%	16.1%	8.9%
1968-1980	3.1%	16.5%	13.1%	7.5%

SOURCE: U.S. Department of Health and Human Services. *The Medicare and Medicaid Data Book, 1983*. Baltimore, MD: Health Care Financing Administration, 1983, p. 18.

U.S. Bureau of the Census. *Statistical Abstract of the United States: 1991 (111th edition)*. Washington, DC: Economic and Statistics Administration, 1991.

four times the corresponding rate of increase in the U.S. population under age 65), with older beneficiaries representing an increasingly larger proportion of the total. As shown in Table 11.2, the oldest beneficiaries (over age 85) represented a much larger proportion of aged beneficiaries in 1985 (10.2 percent) than when the Medicare program began in 1966 (6.2 percent). Meanwhile, the youngest beneficiaries (65 to 74 years) have represented a shrinking proportion of the total number of beneficiaries since 1966. The aging of the Medicare population is likely to be one reason for the rapid increase in average Medicare reimbursements per beneficiary. The rapid increase in both the number of beneficiaries and the average cost per beneficiary pushed total Medicare costs up by nearly 17 percent per year between 1968 and 1980, especially during the last half of this period.

2. Several **Changes in the Medicare Program in the 1980's Have Affected HMOs**

In order to bring these rapidly rising costs under control, HCFA implemented two major reforms, both of which create economic incentives to reduce unnecessary utilization. One reform was to introduce **HMOs** into the Medicare program in a major way, in the hope that prepaying **HMOs** to provide Medicare benefits to enrollees would bring to the Medicare program the same types of cost reductions that **HMOs** were purported to bring to the **nonaged** population. The other major reform--the major payment reform of the decade--was to switch to prospectively determined rates for hospital stays based on diagnosis-related groups (**DRGs**).

Ironically, the 4-year phased implementation of the DRG-based prospective payment system (PPS) for hospital care since 1983 has made it more difficult for **HMOs** to shorten the average length of hospital stay relative to those in the FFS sector, because PPS gives hospitals that treat FFS patients the same incentive as **HMOs** to shorten hospital stays to the minimum length necessary. As we shall see later, the change to PPS appears to have had the intended effect on FFS hospital use. While this change is good for the Medicare, it reduces the likelihood that **HMOs** will have as marked an effect on hospital utilization as they are reputed to have for the **nonaged**, where no such incentive structure exists in the FFS sector.

TABLE II.2
DISTRIBUTION OF MEDICARE BENEFICIARIES BY AGE,
1966, 1985, 1990
(Percent)

	1990	1985	1966
Aged	90.5	90.7	100.0
65-74 years	57.0	58.2	62.8
75-84 years	32.4	31.6	31.0
85 or more years	10.6	10.2	6.2
Disabled	9.5	9.4	0.0
Under 45 years	35.0	29.0	N.A.
45-54 years	22.8	20.4	N.A.
55-64 years	42.3	50.6	N.A.

SOURCE: U.S. Department of Health and Human Services. *HCFA Statistics*. Washington, DC: U.S. Government Printing Office, 1991 and 1986.

N.A. = Not applicable. Disabled beneficiaries were covered by the Medicare program starting on July 1, 1973.

Other more modest changes to the Medicare program also affect risk plans given how the AAPCC payment rates are calculated. For example, two changes to the Medicare coverage guidelines have broadened the situations under which SNF care and home health care are to be covered by Medicare and thus by risk plans. These changes create problems for risk plans because (1) the cost of new or expanded benefits is estimated actuarially, without historical data, and may be quite inaccurate, and (2) the adjustment to the national payment rate for local differences in practice patterns does not begin to reflect cross-area differences in the delivery of the new services until 4 years after the change, and is not fully reflected until 8 years after the change (since the geographical adjustor is based on a five-year average, computed on data that are 4 to 8 years prior to the year in which the adjustor will be applied).¹

3. Despite Declines in Hospital Utilization Rates, Costs Have Continued To Grow Rapidly

The shift to PPS has had a substantial effect on the trend in FFS costs and utilization but costs, especially Part B costs, continue to grow at a rapid rate. Total reimbursements per beneficiary continued to rise during the 1980s, but at a slower rate than the pre-1980 spurt that prompted the legislation for the Medicare risk program (Table 11.3). Both Medicare Part A and Part B reimbursements contributed to the increase in total reimbursements per beneficiary between 1980 and 1989. Reimbursements for Part A benefits (hospital and institutional services), which accounted for about 70 percent of total reimbursements per beneficiary in 1980, rose by 8.2 percent per year during this time, about half the rate observed for overall reimbursements during the 1968-1980 period. The growth in Part A reimbursements slowed considerably beginning in 1983, and was especially low from 1986 to 1988; Part A reimbursements per beneficiary actually dropped by 2.5 percent between 1986 and 1987. Reimbursements per beneficiary for Medicare Part B (physician and other professional

¹A temporary change, the Medicare Catastrophic Coverage Act (MCCA), affected mandated benefits and AAPCC payments in 1989 and 1990. However, since the Act was repealed in 1989, it has had no enduring effect.

TABLE II.3

MEDICARE ENROLLMENT AND REIMBURSEMENTS, 1980 TO 1986

Year	Total				Part A		Part B	
	Enrollment (thousands)	Reimbursement (millions of dollars)	Reimbursement per Enrollee		Reimbursement per Enrollee		Reimbursement per Enrollee	
			Dollars	Annual Percentage Change	Dollars	Annual Percentage Change	Dollars	Annual Percentage Change
1980	28,478	35,699	1,254	--	893	--	388	--
1981	29,010	43,455	1,498	19.5	1,061	18.8	469	21.0
1982	29,494	51,086	1,732	15.6	1,226	15.6	544	16.0
1983	30,026	57,443	1,913	10.5	1,339	8.5	625	14.9
1984	30,455	62,918	2,066	8.0	1,442	8.4	668	6.9
1985	31,083	70,527	2,269	9.8	1,556	7.9	765	14.5
1986	31,750	75,997	2,394	5.5	1,594	2.4	857	12.0
1987	32,411	80,316	2,478	3.5	1,554	-2.5	988	15.3
1988	32,980	86,487	2,622	5.8	1,620	4.3	1,074	8.7
1989	33,579	98,305	2,928	11.7	1,816	12.1	1,193	11.1
Total Percentage Change, 1980-1989	17.9	191.5	133.5	9.9	103.4	8.2	207.5	13.3

SOURCE: U.S. Bureau of the Census. *Statistical Abstract of the United States: 1991* (111 th Edition). Washington, DC: 1991.

NOTE: The sum of mean reimbursements for Part A and Part B is slightly greater than the mean total reimbursements because not all beneficiaries are covered by both Parts A and B. Mean total reimbursements are calculated for all beneficiaries who have either Part A or Part B coverage (or both).

services), which accounted for 30 percent of the total in 1980, increased at a much faster rate (13.3 percent per year) than Part A reimbursements. By 1989, Part B reimbursements accounted for 40 percent of total reimbursements per beneficiary.

Of particular relevance for the risk program are the divergent trends in the costs and utilization of acute-care hospital services, the largest component of Medicare costs. Between 1980 and 1989, utilization declined, but costs increased (see Table 11.4). Total reimbursements for short-stay hospital services increased steadily at an average annual rate of 11.9 percent, but the number of hospital admissions fell by almost one-fifth, and the number of covered hospital days fell by almost one-quarter. Thus, the entire increase in reimbursements for hospital days is due to an increase in hospital costs per day. The rates of utilization dropped markedly between 1980 and 1989, with admissions per 1,000 beneficiaries declining by 3.7 percent per year on average, and hospital days per 1,000 beneficiaries declining by 4.2 percent per year over this interval (from 3,885 to 2,635 days per 1,000 beneficiaries). Reimbursements per admission and per covered day rose by about 14 percent per year between 1980 and 1989.

In part, the increase in costs per day is due to the elimination of some of the least expensive days of care (later days in the stay and less complex cases) as the length of hospital stay and discharge rates fell, but this change in the pattern accounts only for a small portion of the rapid increase in reimbursements per hospital day. This small influence can be seen by noting that average hospital reimbursements per beneficiary grew by 9.8 percent per year (not shown), even though hospital days per beneficiary **declined** by 4.2 percent per year. Thus, the cost per hospital day increased by 14.6 percent per year, over three times the 4.6 percent increase per year in the CPI during this period. Even if all of the hospital days eliminated by the reductions had cost nothing, the effect on average costs per hospital day from the elimination of these least expensive days would have been an increase of only 2.5 percent per year. Thus, costs per hospital day have increased at an annual rate of at least

TABLE II.4
ACUTE CARE HOSPITAL UTILIZATION AND COSTS FOR
AGED BENEFICIARIES OF THE MEDICARE PROGRAM,
1980 TO 1986

	1980	1985	1989	Average Annual Percentage Change 1980-1989
Reimbursements (millions of dollars)	\$28,615	\$49,236	\$78,840	11.9%
Utilization				
Hospital admissions (thousands)	9,258	9,751	7,876	-1.8%
Hospital days (thousands)	98,000	80,000	79,000	-2.4%
Reimbursement Rates				
Per admission	\$3,091	\$5,049	\$10,010	14.0%
Per covered hospital day	\$293	\$617	\$1,002	14.6%
Hospital Utilization Rates				
Admissions per 1,000 beneficiaries	369	352	264	-3.7%
Days per 1,000 beneficiaries	3,885	2,882	2,635	-4.2%
Days per admission	10.5	8.2	10.0	-0.5%

SOURCE: U.S. Bureau of the Census. *Statistical Abstract of the United States: 1991* (111th Edition). Washington, DC: 1991.

12.1 percent (7.5 percentage points greater than the general rate of inflation) during this period, even after the effects of shorter and fewer stays are accounted for.

The trends of increasing costs and declining utilization raise three issues that are relevant to the risk program. First, risk plans have found it harder to be more efficient than FFS, since the decline in utilization in the FFS sector reduced (but did not eliminate) the efficiency advantage that risk plans once enjoyed over FFS. Furthermore, HMOs may find it harder to make a profit in their risk programs than in their commercial business because hospitals face no incentive similar to PPS to control FFS utilization by **nonaged** patients. Second, risk plans may now find that negotiating rates that are lower than the implicit PPS price per hospital day is a more critical factor than before for controlling costs, but that hospitals may not be able to offer low per-diem rates to HMOs if PPS affects hospitals adversely. Third, controlling Part B costs may be increasingly important for financial success, given its rapid growth during the 1980s. HMOs previously devoted efforts to controlling hospital use, but the rapid rise in Part B reimbursements, which now comprise 40 percent of total reimbursements, suggests that devoting greater attention to controlling ambulatory use may be necessary.

B. THE GROWTH OF THE MEDICARE RISK PROGRAM

Between 1985 and 1992 the number of participating plans grew rapidly and then declined, whereas the number of beneficiaries in the program has increased each year. Program enrollment is concentrated in a few very large plans that are located in areas whose AAPCC payment rates are high.

The number of plans in the Medicare risk program in recent years is *less* than the number at the beginning of the first full year of the program (Table 11.5). The number of plans in the Medicare risk program grew from 105 in 1986 to 145 plans in 1987, declined to 85 plans in 1991, and has **remained**

TABLE 11.5

DISTRIBUTION OF MEDICARE RISK PLANS AND ENROLLMENTS, 1966 TO 1992

	1992	1991	1990	1989	1988	1987	1986
Total Number of Contracts	83	85	96	133	132	145	105
Number of Active Plans	81	83	94	101	122	134	71
Total Enrollment	1,379,667	1,240,474	1,091,635	1,039,901	981,145	836,706	467,381
Median Enrollment	7,025	6,441	4,733	4,419	3,544	2,567	2,557
Average Enrollment	17,033	14,946	11,613	10,296	8,042	6,244	6,583
Percent of Plans with Enrollments of:							
1 to 1,000	19.8	19.3	19.2	17.8	18.0	26.9	21.1
1,001 to 5,000	18.5	22.9	33.0	37.6	46.7	43.3	47.9
5,001 to 10,000	21.0	21.7	22.3	20.8	15.6	15.7	15.5
10,001 to 20,000	22.2	21.7	13.8	13.9	13.1	10.4	11.3
X20,000	18.5	14.4	11.7	9.9	6.6	3.7	4.2
Percent of Total Enrollments in Plans of:							
1 to 1,000	0.4	0.6	0.6	0.7	1.0	1.8	1.0
1,001 to 5,000	3.1	5.0	7.9	9.8	15.9	18.2	17.6
5,001 to 10,000	8.7	10.4	14.5	14.9	14.5	16.8	14.7
10,001 to 20,000	17.6	19.8	17.0	19.4	22.9	25.0	21.9
> 20,000	70.1	64.3	60.0	55.2	45.8	38.2	44.8

SOURCE: OPHC Monthly Medicare Prepaid Health Plan Reports, January 1986, 1987, 1988, 1989, 1990, 1991, and 1992.

NOTE: The number of contracts is the number of signed risk **contracts** as of January each year. The number of active plans is the number of **HMOs** with risk contracts that had enrolled one or more beneficiaries as of January. Some **HMOs** never actively enrolled members, despite having a signed contract authorizing them to do so; others simply had not yet begun enrolling as of **January**.

off at 83 plans in 1992. The number of active risk plans (that is, those with some enrollment) exhibited a similar overall trend; after growing in 1985 and 1986, the number of active plans fell steadily.'

In contrast to the declining number of plans in the Medicare risk program, the number of beneficiaries in the program has grown steadily, almost tripling between 1986 and 1992. Enrollment grew rapidly during the first two full years, increased by small rates in 1988 and 1989 (6 and 5 percent), and then grew by more than 10 percent in both 1990 and 1991. The annual rate of growth in total enrollment for all **HMOs** in 1989 and 1990 was almost 6 percent.

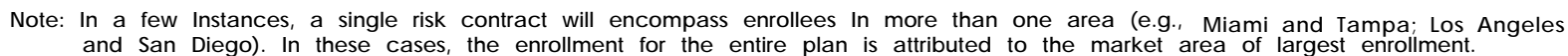
The growing enrollment and declining number of plans nearly tripled the mean and median enrollment in Medicare risk program plans between 1987 (when the number of plans was at its peak) and 1992. Mean enrollment grew from 6,244 in 1987 to 17,033 in 1992. In three of the past six years (1987, 1988, and 1990), mean enrollment grew by almost 30 percent. Median enrollment has increased from about 2,600 in 1987 to over 7,000 in 1992.

The disparity between mean and median enrollment in plans indicates that a few very large plans dominate the risk program. The percentage of plans that have more than 20,000 members has grown from 4.2 percent (3 plans) in 1986 to 18.5 percent (15 plans) in 1992 (Table 11.5). As shown at the bottom of the table, since 1989, the majority of beneficiaries in the program have belonged to these largest plans. In 1989, 55 percent of the enrollees belonged to plans whose Medicare risk enrollment exceeded 20,000 members; by 1992, 70 percent of enrollees belonged to such plans. The three largest plans alone--Humana, in Miami (208,413); FHP, in Los Angeles (158,517); and Pacificare, in Los Angeles (139,465)--accounted for over one-third of total program enrollment.

Correspondingly, a few very large market areas dominate the risk program (Figure 11.1). Enrollment is concentrated in the Miami and Los Angeles market areas, each of which has five or

²The number of **HMOs** nationally has also declined in recent years, dropping from 614 **HMOs** in 1989 to 550 in 1992, after a period of rapid growth.

AREAS IN WHICH MEDICARE RISK PLANS OPERATE AND LEVELS OF ENROLLMENT, JANUARY 1992



more risk plans and more than 100,000 risk members. The next largest market areas, each with at least two plans and between 50,000 and 100,000 members, are Seattle, Portland, Phoenix, and Minneapolis. The four new market areas in 1992--Corvallis, Bakersfield, Tulsa, and Akron--are among the smallest, each with only one plan and 5,000 or fewer members.

Enrollment in risk plans is also concentrated in areas that have the highest **AAPCC** rates (Table 11.6, last column). From 1988 to 1992, almost half of Medicare risk enrollment was in plans whose AAPCC rates are at least 25 percent greater than the average per capita cost for the United States (the USPCC). The proportion of *plans* with AAPCC rates of this magnitude is much smaller--only about one-fourth of plans have AAPCC rates this large. About 20 to 25 percent of all plans (not shown) had AAPCCs below the USPCC, and these plans tend to be quite small.

The AAPCC rates for many plans exhibited wide fluctuations between 1988 and 1992. In Dallas, for example, AAPCC rates rose by 9.8 percent between 1988 and 1989, rose by 16.6 percent between 1989 and 1990, dropped by 3.9 percent between 1990 and 1991, and rose by 4.7 percent between 1991 and 1992. The large increase in **AAPCC** rates between 1988 and 1989 is explained by the additional benefits that were required by the Medicare Catastrophic Coverage Act (MCCA); the reduction in AAPCC rates between 1990 and 1991 is explained by the repeal of the MCCA and the concomitant reduction in benefits. Yet some plans did not suffer from such fluctuations; for example, AAPCC rates in Albuquerque increased every year between 1988 and 1992, by rates ranging from 6 to 15 percent.

C. THE CHARACTERISTICS OF CURRENT RISK PLANS AND HOW THEY HAVE CHANGED

The organizational features, market areas, experience, and benefits and premiums of the HMOs that participate in the risk program differ widely. For example, risk plans can be one of three model types--IPA, group, or staff. An **IPA** (independent practice association) contracts directly with independent physicians or physician groups who work out of their own offices and treat patients on an FFS basis. A group model plan contracts with a physician group, which may or may not treat FFS

TABLE II.6

AAPCC DISTRIBUTIONS OF PLANS AND ENROLLMENTS BY RELATIVE RATES,
1988 TO 1992

Year	Number of Plans	Enrollment	USPCC	Mean AAPCC ^a	Percent of Plans by Ratio of AAPCC to USPCC			Percent of Enrollment by Ratio of AAPCC to USPCC		
					< 1.1	1.1 to 1.25	5 1.25	Cl.1	1.1 to 1.25	> 1.25
1988	100	971,793	\$234.09	\$272.50	36.0	35.0	29.0	20.3	34.0	45.7
1989	83	1,032,345	\$258.60	\$296.48	38.6	33.7	27.7	19.1	33.2	47.7
1990	76	1,085,221	\$293.33	\$336.81	48.7	26.3	25.0	29.7	22.0	48.4
1991	67	1,233,603	\$297.33	\$347.79	49.3	23.9	26.9	26.9	26.3	46.8
1992	65	1,373,554	\$316.07	\$363.70	46.2	30.8	23.1	23.3	31.4	45.3

SOURCE: OPHC Monthly Medicare Prepaid **Plan** Reports for **enrollment** as of January of each year, Office of the Actuary for USPCC and AAPCC rates, and GHPO **files** for the identity of counties from which **HMOs** draw the most enrollees.

NOTE: The AAPCC for an HMO is assumed to be the AAPCC rate for the county **from** which the HMO draws the most enrollees. The table is **restricted** to plans with at least **1,000** Medicare risk members as of January of that year.

^aThe mean AAPCC is the average AAPCC for the plans in the **table**.

patients. A staff model plan employs salaried physicians who treat only members of the HMO. Risk plans also differ from each other according to whether they are independent or affiliated with a national or regional chain, and whether they ever contracted to provide services to Medicare beneficiaries before signing the risk contract. Both of these features, as well as the type of model, may affect an HMO's incentive structure, utilization management practices, and behavior, and may affect its success in the risk program. For example, chain-affiliated risk plans may benefit from the resources that a larger, older, more experienced organization offers. Previous experience can also have obvious benefits, enabling the HMO to become familiar with the sizable differences in the needs and utilization patterns of aged and **nonaged** members. The nature of **HMOs'** previous experience in treating Medicare beneficiaries differs considerably. Many risk plans participated in the precursor to the Medicare risk program, the Medicare Competition Demonstrations. However, some plans that entered after the risk program began have had experience with Medicare beneficiaries through other HCFA contracts, such as cost contracts or HCPP contracts (which cover only Part B services), while some plans have no experience with Medicare members at all. The composition of the risk program **along** each of these dimensions has evolved somewhat over time, but most of the changes have been fairly modest.

1. Risk Plans Tend To Be IPAs, For-Profit, and Chain-Affiliated

About half of the plans in the risk program have been and continue to be **IPAs** (Table 11.7). However, **IPAs** have a smaller-than-proportionate share of enrollment in the risk program (40 percent) because they tend to be small on average, whereas staff model plans are much larger than average, comprising a larger-than-proportionate share of risk enrollment (staff models comprise **16** percent of plans, but have 36 percent of total program enrollment). The proportion of **enrollments** in staff model plans more than doubled from 1986 (15 percent) to 1992 (**36** percent), while the proportion of enrollments in both **IPAs** and group model plans dropped from 1986 to 1992.

TABLE 11.7
ORGANIZATIONAL CHARACTERISTICS OF ACTIVE TEFRA HMOs/CMPs OVER TIME

Characteristic	Percent of Plans				Percent of Enrollments			
	1992	1990	1988	1986	1992	1990	1988	1986
Total Number of Active Plans	81	94	122	71	81	94	122	71
Model Type								
IPA	56.8	54.3	54.9	49.3	40.2	37.2	52.8	53.3
Group	27.2	30.9	29.5	26.8	23.7	26.9	35.0	32.2
Staff	16.0	14.9	15.6	23.9	36.1	36.0	12.1	14.5
Chain Affiliation^a								
Affiliated	54.3	73.4	64.8	62.0	75.7	79.8	56.5	53.3
Independent	45.7	26.6	35.3	38.0	24.3	20.2	43.5	46.7
Tax Status								
For-Profit	58.0	52.1	38.0	43.7	63.7	58.1	40.1	54.1
Nonprofit	42.0	47.9	62.0	56.3	36.3	41.9	59.9	45.9
Region^b								
New England	7.4	9.6	13.1	15.5	3.6	4.1	6.5	8.2
Mid-Atlantic	11.1	11.7	13.1	11.3	6.4	7.2	6.2	4.4
South Atlantic	12.3	13.8	12.3	9.9	20.7	19.5	19.5	35.3
Midwest	21.0	25.5	32.0	35.2	11.7	17.2	29.5	30.9
South Central	9.9	7.5	6.6	4.2	3.2	1.7	0.7	0.3
Mountain	13.6	13.8	8.2	8.5	9.1	7.7	6.3	3.4
Pacific	24.7	18.1	14.8	15.5	45.3	42.6	31.3	17.6
Previous Medicare Contract^c								
Demonstration	19.8	21.3	23.8	42.3	41.2	35.9	46.2	81.4
Cost	7.4	9.6	11.5	16.9	16.5	15.6	14.1	9.7
HCPP	8.6	8.5	6.6	1.4	15.0	25.5	13.1	0.6
Prior risk contract	11.1	6.4	NA	NA	5.4	2.1	NA	NA
No experience	53.1	54.3	58.2	39.4	21.9	21.0	26.6	8.3
Year Began Enrolling Under TEFRA								
1985	34.6	38.3	41.0	91.6	61.6	63.4	64.1	98.9
1986	19.8	27.7	44.3	8.5	15.4	16.1	28.9	1.1
1987	13.6	16.0	13.1	NA	14.4	14.4	6.7	NA
1988	13.6	12.8	1.6	NA	3.5	1.6	0.3	NA
1989	1.2	2.1	NA	NA	3.1	3.8	NA	NA
1990	4.9	3.2	NA	NA	1.6	0.7	NA	NA
1991	11.1	0	NA	NA	0.5	0	NA	NA
1992	1.2	0	NA	NA	*	0	NA	NA

TABLE II.7 (continued)

SOURCE: OPHC Monthly Medicare Prepaid Plan Reports, January 1986, January 1988, January 1990, and January 1992.

NOTE: Data for each year reflect the program experience as of January for active plans (those with enrollees).

^aThe drastic change in the number and percentage of plans that are affiliated with chain organizations may be misleading: inconsistencies in whether plans identified themselves as chain-affiliated between 1990 and 1991 account for much of the difference. Whether the change in reporting reflects a change in ownership or a reporting error cannot be determined from the OPHC data.

^bCorresponds to the definition used by the Group Health Association of America.

“Demonstration” includes all plans that held a Medicare risk contract as a demonstration plan prior to the start of the Medicare risk program (April 1985). “Cost” includes plans that had a Medicare cost contract before signing a Medicare risk contract and were never a demonstration risk plan. “HCPP” plans are plans that held HCPP contracts (covering only Part B services on a risk basis) before joining the risk program (and never held a demonstration risk contract). Of the seven plans with a “prior risk contract,” two had a DCG (diagnostic cost group) contract, under which the payment rate depended on the pre-enrollment utilization of enrollees. The other five plans had held a Medicare risk contract previously, dropped out of the program, and later reentered the risk program.

*Less than 0.1 percent

NA = not applicable.

In 1992, plans with for-profit tax status dominate the risk program and its enrollments. More than half of the plans in the risk program are for-profit, and they have nearly two-thirds of total program enrollment. These figures represent a significant change since 1988, when for-profit plans comprised only 38 percent of plans and 40 percent of enrollments.

In 1992, 54 percent of the plans in the risk program are chain-affiliated; however, that proportion had been as high as 73 percent in 1990. Despite the decline in the proportion of plans that are affiliated with chains, the proportion of enrollments in chain-affiliated plans has increased markedly, from 54 percent in 1986 to about 75 percent in 1992.

2. Nearly Half of the Enrollees Are in the Pacific Region; Few Plans Serve Rural Areas

In 1992, the Pacific region contains the plurality of risk plans and enrollments (again see Table 11.7). About one-quarter of the plans and almost one-half (45 percent) of enrollments in 1992 are in the Pacific region, reflecting the 16 percent growth in plans and 17 percent growth in enrollments in that region since 1986. The preeminence of the Pacific region in the risk program reflects the high level of HMO activity and acceptance generally in the West--one-third of total HMO enrollments in the United States are in the Pacific region. The region with the second-largest total enrollment in HMOs--the Midwest--has experienced a very different growth pattern under the Medicare risk program. Whereas this region previously accounted for the largest share of risk plans and a large share of total risk program enrollment, both shares have declined markedly.

Less than one-quarter (23 percent) of the plans in the risk program in 1991 extended their Medicare services to beneficiaries in rural counties (not shown in Table 11.7; see Serrato and Brown, 1992). Among risk plans that offer commercial coverage in both urban and rural counties, less than half offer their risk plan in their rural counties. Rural counties in which risk plans are offered tend to have higher AAPCC rates than those excluded from the risk plan service area.

3. Enrollments Are Concentrated in HMOs Entering the Risk Program Early and in Plans with Previous Medicare Experience

The majority of plans (53 percent) in 1992 had no experience in providing coverage to Medicare beneficiaries prior to the risk program, but only about one-fifth (22 percent) of the enrollments were in risk plans without previous Medicare experience (again Table 11.7). These figures represent a considerable increase from 1986, where about 40 percent of plans and only 8 percent of enrollments belonged to plans without Medicare experience. This change is due entirely to the fact that over two-fifths of the risk plans in 1986 had participated in the preceding demonstration programs. By 1992, the proportion of plans with such experience was halved, as nearly half of those plans with demonstration experience left the program and new plans entered. Note, however, that an increasing proportion of risk plans have previous experience as health care prepayment plans (HCPPs, under which HMOs are **capitated** only for Part B services), and that there is a corresponding decline in the proportion of risk plans that held a Medicare cost contract (under which HMOs are reimbursed for their costs, up to the AAPCC rate).

In 1992, the oldest plans (those entering the program in 1985) comprise over 60 percent of risk enrollment, but represent only one-third of the plans in the program. Conversely, plans that began in 1988 or later also comprise one-third of the plans, but account only for 9 percent of risk enrollment in 1992. This difference reflects the time required to establish a membership base, and the fact that plans that began operations in 1985 and are still operational in 1992 are the most **successful** of the plans that began in 1985, whereas several of the plans beginning in 1988 may not stand the test of time. Interestingly, the proportion of risk enrollment in the oldest plans has remained very stable since 1988, falling only slightly from 64 percent in 1988 to 62 percent in 1992.

4. One Third of the Plans Continue to Offer Prescription Drugs; One Fifth Do Not Charge a Premium

The supplemental benefits offered by risk plans have changed since 1986 (Table 11.8). Currently, over 90 percent of the plans cover preventive care, 82 percent cover eye care, about 60 percent cover

TABLE II.8

DISTRIBUTION OF PLANS, BY BENEFITS, PREMIUMS, AND COPAYMENTS
(Percent)

	1992	1991	1990	1989	1988	1987	1986
Number of Plans	81	83	94	101	122	134	71
Plans Offering Coverage for: ^a							
Prescription drugs	33.3	33.7	34.0	37.6	34.4	42.5	52.1
Dental care	29.6	27.7	22.3	6.9	16.4	11.2	14.1
Extended mental health benefits	32.1	8.4	100.0	26.7	60.7	29.9	31.0
Preventive care	91.4	94.0	71.3	81.2	99.2	79.9	84.5
Eye care	81.5	85.5	85.1	44.6	36.1	60.4	53.5
Ear care	59.3	71.1	51.1	24.8	54.9	35.1	26.8
High Option							
Offered	NA	14.5	9.6	8.9	9.0	21.6	35.2
Not offered	NA	85.5	90.4	91.1	90.2	77.6	64.8
Premiums (dollars per month)							
\$0	21.0	21.7	17.0	12.9	12.3	10.4	16.9
\$0.01 to \$30	13.6	9.6	17.0	24.8	34.4	44.0	57.7
\$30.01 to \$50	14.8	22.9	40.4	39.6	39.3	43.3	25.4
\$50.01 to \$75	39.5	33.7	23.4	22.8	13.9	2.2	0.0
>\$75	11.1	12.1	2.1	0.0	0.0	0.0	0.0
Median premium	\$52.00	\$48.70	\$39.14	\$37.25	\$33.88	\$28.83	\$23.90
Change in Premium from Preceding Year ^b							
Decrease	11.4	8.6	25.3	8.7	18.0	7.9	14.8
No change	31.4	23.5	18.7	19.6	23.0	20.6	60.7
≤ \$5.00 increase	10.0	8.6	23.1	28.3	20.0	27.0	11.5
\$5.01 to \$10.00 increase •	24.3	13.6	16.5	17.4	16.0	17.5	6.6
>\$10.00 increase	22.9	45.7	16.5	26.1	23.0	27.0	6.6

^aData were compiled from OPHC Monthly Status Reports: December 1985 (1985), July 1986 (1986), December 1986 (1987), March 1988 (1988), February 1989 (1989), April 1990, April 1991, and March 1992.

^bCalculated only for plans in existence the previous year.

NA = not available.

ear care, and about one-third cover prescription drugs, dental care, and mental health services beyond what Medicare covers. Since the start of the program, most plans have offered preventive care as part of their basic benefit packages, but the proportion has varied each year from 71 percent to 99 percent. The proportion of plans offering prescription drugs as part of the basic benefit package dropped from over 50 percent in 1986 to about one-third by 1988 and has remained at that level. The opposite trend occurred among plans whose basic benefit package included dental care; very few plans (between 7 percent and 16 percent) offered dental care prior to 1990, but about one-quarter of the plans offered dental care during the last three years. The proportion of plans covering eye care and ear care as basic benefits has fluctuated, but is higher in recent years than in early years. The proportion of plans offering extended outpatient mental health care as part of their basic benefits has fluctuated greatly during the past six years. Part of the reason for the fluctuation is that risk plans were required to cover extended outpatient mental health care in 1990 as part of the MCCA. When the MCCA was repealed in 1991, only 8 percent of the plans offered this benefit. The proportion has since returned to approximately the level that prevailed prior to the MCCA change--about 30 percent.

Initially, a **sizeable** number of plans (about one-third) offered a “high-option” package to beneficiaries in addition to their basic plan. The high-option package included more benefits, had fewer or lower copayments, and cost more. Few beneficiaries chose these options, however, and those who did tended to be sicker on average than others. By 1988, the proportion of plans offering such options had dropped below 10 percent and has remained low ever since.

Median monthly premiums for Medicare risk plans more than doubled between 1986 and 1992, rising about 14 percent per year on average to the 1992 level of \$52 per **month**.³ At the same time, the proportion of risk plans that do not charge a premium has increased--from about 1 in 6 plans in

³This rate of increase is similar to the percentage increase in average commercial premiums charged by all **HMOs** in the middle of this period--73.9 percent between 1988 and 1989, and 16.3 percent between 1989 and 1990.

1986 to about 1 in 5 plans in 1992. On the other hand, before 1990, no plan charged a monthly premium in excess of \$75; in 1991 and 1992 about 10 percent of plans charged premiums that high.

Despite the fairly high *rate* of increase in premiums charged by the HMOs, most plans made relatively modest adjustments to their premiums, as shown at the bottom of Table 11.8. In each year except 1991, at least half of the plans reduced premiums, increased their premiums by less than \$5 per month, or did not change their premiums. The repeal of the MCCA was responsible for the large increases in premiums for 1991, offsetting the modest increases between 1989 and 1990. While the MCCA was in effect in 1990, plans could moderate their premium increases or cut premiums because Medicare was paying HMOs to cover some benefits for which plans had previously charged premiums. (The USPCC for 1989 and 1990 increased by 10.5 percent and 13.4 percent, respectively, as was shown in Table 11.6.) With the repeal of the MCCA, Medicare no longer covered some benefits and dropped their payments to HMOs accordingly. (The USPCC for 1991 increased only by 1.4 percent.) Plans that wished to maintain their benefit packages were thus forced to raise premiums to cover the cost of the repealed benefits.

D. THE CHARACTERISTICS OF ENROLLEES IN RISK PLANS

Risk plan enrollees are not a representative cross-section of Medicare beneficiaries (see Table 11.9, adapted from Hill et al., 1992). Compared with other beneficiaries who reside in the same market areas, enrollees are younger, less likely to be in nursing homes, less likely to be disabled, and less likely to be on Medicaid--all of which are associated with lower average reimbursements. The AAPCC payment methodology takes these demographic risk factors into account, and thus average payments to HMOs per enrollee-month are about 15 percent below the published average county AAPCC rates.

Enrollees are also healthier than nonenrollees along a number of other indicators available from a survey of random samples of over 6,000 enrollees and 6,000 nonenrolled beneficiaries in 1990 (discussed in the next chapter). These enrollees, over half of whom had been enrolled for at least

TABLE II.9

THE CHARACTERISTICS OF ENROLLED AND NONENROLLED MEDICARE BENEFICIARIES
IN AREAS WITH MEDICARE RISK PLANS
(All table entries are proportions)

	Enrollee Proportion or Mean	Nonenrollee Proportion or Mean	Enrollee- Nonenrollee Difference
AAPCC Demographic Risk Factors			
Disabled (under age 65)	.028	.077	-.049 ***
Ages 65-69	.227	.217	.010
Age 70-74	.309	.270	.039 ***
Age 75-80	.222	.188	.034 ***
Age 80-84	.129	.134	-.005
Age ≥ 85	.085	.114	-.029 ***
Male	.442	.417	.025 • **
Medicaid	.023	.093	-.070 • **
Nursing home resident	.018	.058	-.040 ***
Health Status			
Poor health	.056	.092	-.036 ***
Number of impairments in activities of daily living	.128	.303	-.175 ***
Number of impairments in instrumental activities of daily living	.668	1.093	-.425 ***
History of cancer, heart disease, or stroke	.274	.322	-.048 ***
Died within 9 months after interview date	.046	.053	-.007 •
Preferences for Seeking Care			
Worries about personal health more than others	.173	.200	-.027 • **
Avoids doctor if a problem arises	.270	.247	.023 ***
Has a usual place of care (prior to enrollment for enrollees)	.853	.914	-.061 • **
Other Personal Characteristics			
Race (percent not white)	.078	.067	.011 **
Income	\$17,689	\$20,157	-\$2,468 ***
Education			
College degree	.118	.149	-.031 ***
High school graduate, no college degree	.566	.579	-.013 •
Sample Size	6,458	6,071	12,529

NOTE: All variables except the AAPCC risk indicators were obtained from the survey. With the exception of nursing-home residence, the AAPCC risk indicators were obtained from the Medicare Master Beneficiary File (nonenrollees) and the GHPO file. Data from the survey identified nursing-home residents. All market area characteristics, except county AAPCC rates, were obtained from the Area Resource File.

- Significantly different from zero at the .10 level, two-tailed test.
- Significant at the .05 level, two-tailed test.
- Significant at the .01 level, two-tailed test.

3 years by the time of **interview**,⁴ are less likely to require assistance with various common daily activities (for example, eating, bathing, and shopping), less likely to have a history of serious illness (cancer, heart disease, or stroke), and less likely to say that their health is “poor.” The differences in demographic risk factors account only for a portion of the observed differences in these measures.

Enrollees also tend to have had less access to care prior to enrolling than did nonenrolled beneficiaries. Their income is lower on average, but they are less likely to have had Medicaid coverage.⁵ An earlier study (Brown et al., 1986) also found that recent enrollees in risk plans who had been covered by Medicare for at least two years prior to joining were less likely than nonenrollees to have had insurance coverage to supplement Medicare during the pre-enrollment period. Enrollees also were less likely than nonenrollees to have had a usual place they went for health care prior to joining the HMO.

The demographic characteristics and attitudes of enrollees toward health and health care also differ from those of the Medicare population. Those who join an HMO are less well-educated on average, and HMOs contain slightly more blacks than would be suggested by their share of the Medicare population in cities with Medicare HMOs. Enrollees indicate less worry about their health and more often say that they avoid going to see a doctor even when they are sick, if at all possible.

These differences between enrollees in Medicare HMOs and other beneficiaries may have important effects on whether the risk program achieves its goal to save money for Medicare. Our

⁴Only 11 percent of the enrollee sample had been enrolled for less than one year at the time of the interview. See Appendix B for a distribution of enrollees by length of time enrolled.

⁵The combination of enrollees having lower average incomes but being healthier on average is somewhat unusual, in that individuals with low incomes are generally in poorer health on average *in the population*. The reason for the observed combination for enrollees is that the beneficiaries most likely to enroll are (1) those with few or no health problems, because they are less likely to have a strong link to a particular physician, specialist, or hospital that would have to be broken in order to enroll, and (2) those who are poor (but not on Medicaid), because they are least able to afford a medigap policy or to cover medical costs out-of-pocket. The combined effects of these two factors leads to the observed pattern of healthier, but poorer enrollees on average.

findings on this issue and details on the magnitude of the differences between enrollees and nonenrollees are described in the next chapter.

III. DOES THE MEDICARE RISK PROGRAM SAVE MONEY FOR MEDICARE?

One of the primary objectives of the Medicare risk program is to reduce the cost to HCFA for providing Medicare coverage to enrolled beneficiaries. However, our results suggest that the Medicare costs incurred on behalf of enrollees would have been substantially less than what HCFA paid the risk plans. This estimated increase in costs to HCFA is due solely to the failure of HCFA's payment mechanism to account for differences between enrollees and nonenrollees on factors that affect health care use, especially the substantially better-than-average health of the beneficiaries who enroll in Medicare risk plans.

A. EXPECTED EFFECTS

The payment mechanism is designed to enable HCFA to share some of the savings in resources that it expects HMOs to generate. Each month, HMOs are paid a predetermined rate for each enrolled beneficiary, based on the adjusted average per capita cost (AAPCC)--the actuarial-based estimate of what Medicare expects to pay in fee-for-service (FFS) reimbursements for Medicare-covered services for beneficiaries in a given county--multiplied by an individual-specific "risk factor." The individual-specific risk factors determine into which of 60 rate cells the individual falls, based on the enrollee's age, sex, institutional status (residing in a nursing home or not), Medicaid eligibility, and reason for entitlement (aged or disabled). Each cell has a corresponding risk factor, based on nationwide actuarial estimates, indicating the expected cost to Medicare for persons in that cell relative to the overall average. Thus, for example, younger individuals have risk factors below 1.0, and individuals living in nursing homes have factors well above 1.0. Separate county AAPCC rates and risk factors are used for Part A and Part B. The county AAPCC for Part A and Part B are obtained by multiplying actuarial projections of the expected average cost per Medicare beneficiary for the entire United States (the USPCC) by a geographic adjustment factor. The geographic adjustor is an estimate of the ratio of average cost per Medicare beneficiary in the county to average

cost in the United States, based on the actual average ratio over the most recent **5-year** period for which data are available.

In order to share in the expected cost-savings that **HMOs** are expected to generate, HCFA pays **HMOs** only-95 percent of the risk-adjusted AAPCC rate for each beneficiary it enrolls. The expectation was that, on average, the AAPCC would be a reasonably accurate indicator of what HCFA would have spent in FFS reimbursements for enrolled beneficiaries. Thus, by paying risk plans 95 percent of the AAPCC, HCFA expects to save 5 percent.

1. Costs and Savings to Medicare Are Determined by Biased Selection

Savings to the Medicare program will be realized only if the capitation payments that HCFA makes for enrolled beneficiaries are less than the costs that Medicare would have incurred for enrollees had they received care in the fee-for-service sector. Two conditions could prevent the Medicare program from realizing the intended 5 percent savings: (1) payment rates that differ from the actual costs incurred by Medicare for those who do remain in the FFS sector, and (2) differences in the characteristics of beneficiaries who enroll and those who do not that may affect their health care utilization, but are not fully captured by the factors that determine the capitation payment (that is, age, sex, nursing-home residence, Medicaid eligibility, reason for entitlement to Medicare, and county of residence). These latter differences are referred to as “biased selection,” which can be either “adverse” or “favorable” from the HMO’s perspective, depending on whether the enrollees are sicker or healthier than the nonenrolled beneficiaries.

Our evaluation has measured only the effects of biased selection, the second of the two conditions that may prevent HCFA from realizing the intended 5 percent savings. The accuracy of the AAPCC methodology for predicting the actual FFS reimbursements of those who remain in FFS is an actuarial issue, and is the subject of other studies. Furthermore, as with any projection, the AAPCC will be inaccurate to some degree for a particular year or county or for randomly chosen group of beneficiaries, even if it predicts mean reimbursements for beneficiaries with reasonable

accuracy in general. Our concern is not with these types of normal prediction errors, but with whether differences between enrollees and nonenrollees would lead to systematic errors in the projections. That is, after enrollee-non enrollee differences in reimbursements that can be explained by differences in the characteristics that determine the HMO's payments are accounted for, would the average reimbursements of the two groups have differed had they both received care from providers in the FFS sector?

It is useful to bear in mind that the ability of **HMOs** to control utilization and negotiate discounts with providers has absolutely no bearing on the costs to HCFA. 'Increases in efficiency and lower prices are certainly important for the future of the Medicare risk program and for assessing the size of **potential** savings to **HCFA**; however, once the **capitation** rate is set, costs to HCFA for a given set of enrollees are **fixed**. The **HMOs'** utilization control procedures and negotiations affect only their own costs and profits.

2. **Previous Findings Suggest That Risk Contracting Has Increased Costs to HCFA**

If selection into **HMOs** is favorable from an HMO's perspective, HCFA would incur higher costs for "healthier" enrollees than it would have incurred had they remained in the FFS sector. In this case, HCFA would not realize the 5 percent savings, and, if selection is quite favorable, HCFA may actually spend more than it would have for FFS coverage. If selection is adverse, HCFA would save more than 5 percent, but **HMOs** may have a difficult time covering their costs and may discontinue risk contracting.

Four types of studies of biased selection and the cost or savings to HCFA from Medicare risk contracting have been conducted, and virtually all of them suggest that risk contracting is likely to increase costs to **HCFA**.

a. Prior-Use Studies

The most prevalent type of study has entailed comparing the average Medicare reimbursements for enrollees over some pre-enrollment period with the risk-adjusted average reimbursements during a comparable period for beneficiaries who reside in the same area but are not HMO enrollees. The average reimbursement for nonenrollees is adjusted to account for differences between enrollees and nonenrollees in the characteristics used to determine the AAPCC payment level for a given enrollee. Thus, any differences in prior reimbursements that can be explained by the AAPCC factors are netted out of the comparison. This approach was first used by Eggers and Prihoda (1982) for four HMOs participating in an early demonstration program for Medicare risk contracting (the Medicare Capitation Demonstration). Brown (1988) applied the same approach to examine biased selection in 17 HMOs participating in a second demonstration program, the Medicare Competition Demonstrations. The two studies found that selection ranged from very favorable to adverse. However, most HMOs (13 of 17 in Brown's study) experienced favorable selection; when ratios were averaged across the HMOs in the study, enrollee reimbursements were about 20 percent lower than risk-adjusted reimbursements for nonenrollees. Only one HMO experienced adverse selection in Brown's study, and three experienced neutral selection.

Another measure of biased selection based on preenrollment service use focuses more on chronic problems--a comparison of the proportion of enrollees and nonenrollees who have a hospital stay for a diagnosis associated with high expected future costs. Both Brown (1988) and Hill and Brown (1990) found that, compared with nonenrollees, enrollees were significantly less likely to have been hospitalized for a high-cost diagnosis during the two years prior to enrollment, even after controlling for AAPCC risk characteristics.

b. Comparisons of Adjusted Mortality Rates

Studies based on a second measure of biased selection--differences in postenrollment mortality rates--have also found that selection is quite favorable. The risk-adjusted difference in mortality rates

provides a potentially attractive measure of biased selection, since it is not subject to the most common objection to prior-use measures of biased selection--that the below-average utilization of enrollees prior to enrolling is likely to “regress toward the mean” in future years as they age. Both Brown (1988) and Riley, Lubitz, and Rabey (1991) found that mortality rates were 20 to 25 percent lower among beneficiaries enrolled in Medicare risk plans, after controlling for enrollee-nonenrollee differences in factors included in the AAPCC payment rate schedule.

c. Comparisons of Health Status

Two other studies have measured biased selection by comparing the self-reported measures of health status of enrollees and nonenrollees. Both-Brown et al. (1986) and **Lichtenstein** et al. (1992) found that, at the time of enrollment, those who enrolled were significantly more likely than nonenrollees to be able to perform routine daily activities without assistance. Enrollees also were significantly less likely to rate their health as poor and less likely to be inordinately worried about their health. However, these studies did not control for differences in the **AAPCC** risk factors for the two groups.

d. Estimates of FFS Costs for Enrollees

The only direct estimates of the effects of Medicare risk contracting on the costs to HCFA are provided in Nelson and Brown (1989), who suggest that HCFA paid 15 to 33 percent more in **capitation** payments than it would have paid in **FFS** reimbursements for the enrollees in the 17 Medicare Competition Demonstration plans. The authors assumed that reimbursements for enrollees, had they remained in the FFS sector, would have increased between the two-year pre-enrollment and postenrollment periods by the same proportion as reimbursements increased **over** a comparable period for a sample of nonenrollees in the same market area.

e. Qualifications to Previous Studies

Although all of these studies suggest that most Medicare HMOs tend to experience favorable selection, each of the studies has flaws. Prior reimbursement measures probably overstate the degree of favorable (or adverse) selection because a randomly chosen group of beneficiaries whose average reimbursements are well below the overall mean in one year will tend to have mean reimbursements that are much closer to the overall mean in future years (“regression toward the mean”). While enrollees are not selected randomly, it is likely that at least some of the observed difference in prior utilization is not due to differences in chronic health problems, but to the fact that most enrollees choose to join an HMO and switch physicians (typically) during a period when they are relatively healthy. Mortality measures are suspect because they do not indicate the likely enrollee-nonenrollee differences in health care needs for the 95 percent of beneficiaries who do not die in a given year. Furthermore, the enrollee mortality rates may be influenced, to some modest degree, by the HMO’s style of care. Finally, enrollee-nonenrollee differences in health status and other self-reported measures have unknown effects on future Medicare reimbursements.

Another problem with virtually all of these studies is that, because they were based on demonstrations, they assess only the experience of enrollees in their first year or two of HMO membership. Thus, the analyses and estimates may not provide reliable measures of the difference between the current stock of enrollees in the Medicare risk program and nonenrollees, and thus may give misleading indications of the costs of risk contracting to HCFA in the current program.

3. Hypotheses Examined in the Current Evaluation

The questions that we have examined in the evaluation of the ongoing Medicare risk program are similar to those addressed in the earlier studies of risk contracting, but are more comprehensive. Our ultimate goal is to provide estimates of the costs or savings to HCFA from the risk program and show how these estimates vary according to the characteristics of HMOs and beneficiaries. Thus, while we measure biased selection with methods similar to those used in previous studies, we also

develop cost impact estimates that are not subject to the same shortcomings as previous measures of biased selection. In particular, the impact estimates are based on the stock of enrollees at a point in time, rather than on the flow of new entrants.

Our analysis addressed the following questions:

- How do the preenrollment reimbursements for Medicare enrollees differ from the reimbursements for geographically matched nonenrollees, after differences in AAPCC risk indicators are controlled for?
- How do the proportions of enrollees and nonenrollees with high-cost diagnoses differ, after differences in AAPCC risk indicators are controlled for?
- How does biased selection differ across plans and according to the characteristics of the plan (for example, model type, for-profit status, enrollment size, and AAPCC rate received)?
- How do enrollees and nonenrollees differ along characteristics that are likely to be related to health care use, but that are not captured by the AAPCC risk factors?
- What is the difference between the **capitation** payments made by HCFA and the amount that HCFA would have paid in reimbursements for enrollees had they not joined a Medicare HMO?
- How do costs or savings to HCFA from the risk program vary according to the payment rate or the characteristics of the HMO or the beneficiaries?
- What accounts for the savings or cost increases to HCFA?

B. DATA AND RESEARCH APPROACH

Three reports prepared for the evaluation--a report on biased selection based on prior use measures (Hill and Brown, 1990), a report on enrollee-nonenrollee differences in self-reported health status, socioeconomic characteristics, and attitudes toward health and health care (Hill and Brown, 1992), and a report on the effects of the risk program on the use and cost of services (Hill et al., 1992)--addressed one or more of the research issues. Although all of the reports were motivated by the overriding issue of how costs to HCFA are affected by the risk program, they were based on different data sets and samples and addressed the issue from different perspectives.

1. Survey and Medicare Claims Data Were Key Data Sources

Two types of data were used for the analysis in the three reports--data from Medicare claims, obtained from the MADRS (Medicare Automated and Data Retrieval System) file, and data from a large survey of enrollees and nonenrollees who live in the cities where risk plans are offered. The data were collected for two very different samples of individuals.

Claims data for 1985 and 1986 were collected for samples of 1,000 enrollees drawn from each of the 98 Medicare risk plans that had a sufficient number of new enrollees between January 1986 and December 1988, and for comparison samples of **2,000** Medicare beneficiaries drawn from each of the 48 market areas in which these **HMOs** were operating (samples of 3,000 enrollees per plan and 6,000 nonenrollees were drawn from each of the two areas with the most risk plans, Miami and Los Angeles). Both the enrollee and nonenrollee samples were restricted to beneficiaries who were eligible for Medicare throughout 1985 and 1986 and who had not enrolled in a Medicare HMO during that period. (Thus, the enrollee sample excludes beneficiaries who joined the HMO immediately upon becoming eligible for Medicare.) The enrollee samples for most **HMOs** were further restricted to those who joined the HMO in 1987 or 1988. These data were used to draw the comparisons of pre-enrollment reimbursements.

The second source of data was a survey of nearly 13,000 Medicare beneficiaries, split evenly between enrollees and those who did not enroll but resided in the same counties as enrollees. The enrollees were a random sample of all beneficiaries who were enrolled as of April 1, 1990 in one of the 75 Medicare risk plans that contained 1,000 or more members at that time, and who had been enrolled for at least three months. Enrollees in small plans (1,000 to 7,500 members) were oversampled and those in the four largest plans were undersampled, so that the sample could be used to weight either each enrollee equally or each plan equally without a significant loss in precision. Over half of the enrollee sample had been enrolled in the Medicare risk plan for at least three years at the time of the interview. The nonenrollee sample, selected from beneficiaries who were not

members of an HMO between April 1989 and the date of interview, was drawn to match the distribution of enrollees across ZIP codes. This design eliminated differences between the two groups that could arise from variations in practice patterns across regions or cities. Appendix B provides details of the sample selection procedures and distributions of the samples across plans and market areas.

The survey, conducted between April and October 1990, gathered data on the recent utilization of Medicare-covered services by sample members and on the characteristics that might affect their utilization. The latter included measures of health (their ability to perform routine activities, self-reported health status, and days confined to bed), access to care (income and insurance coverage), and propensity to use care (relative worry about health, inclination to avoid doctors, and having a usual place of care). Survey data on sample members were supplemented with Medicare claims data for 1989 and 1990 (from MADRS) for nonenrollees, and with data on sample member deaths during the nine-month period following the interview.

2. Enrollees Were Compared with Nonenrollees to Assess Biased Selection and the Effects on the Costs to HCFA

The hypotheses about biased selection and the costs to HCFA were addressed with statistical analyses that compared enrollees with nonenrollees, always controlling for differences in the characteristics that are reflected in the AAPCC rate structure. The biased selection analysis essentially repeated the analysis of earlier biased selection studies, estimating for each Medicare risk plan the difference between the reimbursements of enrollees and local area nonenrollees during 1985 and 1986, a period which preceded enrollment in the HMO (Hill and Brown, 1990). As indicated, nonenrollee means were adjusted to account for differences in AAPCC risk indicator& since enrollees were younger, less likely to be on welfare, less likely to be in nursing homes, and less likely to be disabled, all of which are differences that imply a lower average reimbursement for enrollees. The difference in the proportion of enrollees and nonenrollees with high-cost diagnoses during 1985 and

1986 was also estimated for each Medicare risk plan. In computing these differences, Hill and Brown used a logistic regression model to control for AAPCC risk indicators. They also used the claims data to calculate adjusted differences between enrollees and nonenrollees for different types of plans and market areas.

A similar type of comparison relied on the survey data to examine differences in other characteristics of enrollees and nonenrollees that might affect reimbursements (Hill and Brown, 1992). Health status measures, variables that reflect access to care, and attitudinal variables were regressed on enrollment status and AAPCC risk indicators to determine the existence of differences between the two groups that had not been accounted for fully by the differences in age and other AAPCC risk indicators.

Finally, Hill et al. (1992) estimated the effects of the Medicare risk program on the cost to HCFA by directly estimating the cost that HCFA would have incurred for enrollees had they remained in the FFS sector, and then comparing this estimate with estimates of what HCFA was paying in capitation payments for these individuals. Estimates of the FFS reimbursements that would have been paid out by HCFA were derived from a regression analysis that estimated the relationship between the reimbursements paid for *nonenrollees* in 1989 and the characteristics of these individuals, including both AAPCC risk indicators and more detailed survey measures. The estimated equation was then used with survey data on enrollees to predict what their reimbursements would have been.⁷

The estimated FFS reimbursements for enrollees were compared with a regression equation projection of AAPCC payments rather than with actual AAPCC payments, for two reasons. First, the sample of nonenrollees on which the reimbursement equation was estimated consists entirely of individuals who were alive for the period over which reimbursements were measured, whereas the

⁷For two binary variables that were very important predictors of Medicare reimbursements--medigap coverage and having a usual place of care--it was necessary to estimate the proportion of enrollees who would have had the characteristic, rather than using the value reported by enrollees, which pertained to the period preceding enrollment in the HMO.

AAPCC rates include the costs of the 5 percent of beneficiaries who die. Thus, the AAPCC rates would substantially overestimate the implicit payments for survivors, since the beneficiaries who die in a given year account for a disproportionate share (about 28 percent) of total Medicare reimbursements for that year. Second, the AAPCC rates will not necessarily provide an accurate estimate of the FFS costs for any particular time period, location, or subgroup of individuals even for *nonenrollees*, even if the AAPCC is accurate on average. Our purpose, however, is to measure the *systematic* cost increases or savings to HCFA due to the risk program. Thus, we use an estimated AAPCC equation derived from nonenrollees to project the AAPCC payments that would be made for enrollees if the AAPCC perfectly reflected average reimbursements for nonenrollees in any particular market area, as it is intended to do. The AAPCC model is identical to the model we used to project FFS costs, except that we used only a subset of the beneficiary characteristics--the AAPCC risk indicators only--to generate our AAPCC payment formula. We projected payments for enrollees by inserting their values for these AAPCC risk indicators (including place of **residence**) into the estimated payment equation, and multiplying by .95 (since the payments to plans are 95 percent of the AAPCC).

C. ESTIMATES OF BIASED **SELECTION** AND COSTS/SAVINGS TO HCFA

Our findings confirm the earlier studies that indicated the existence of favorable selection, and provide new estimates of its implications for the costs to **HCFA**. The findings discussed in this section were drawn from the three reports described earlier (Hill and Brown, 1990 and 1992; and Hill et al., 1992).

1. New Enrollees Had Markedly Lower Medicare Reimbursements and Fewer High-Cost Hospital Stays Than Did Nonenrollees in the Preenrollment Period

Prior reimbursements, adjusted for enrollee-nonenrollee differences in AAPCC factors and weighted to reflect the length of HMO enrollment,² were 23 percent lower for new enrollees than for nonenrollees on average. Figure III.1 shows that, although some dispersion in the ratios of prior reimbursement for enrollees to those for nonenrollees exists across plans, the ratios of most plans were below .80. In very few plans did enrollee reimbursements exceed adjusted nonenrollee reimbursements, and none of these differences is significantly different from zero. The enrollee-nonenrollee difference is statistically significant for 63 percent of the plans, indicating favorable selection in each case.

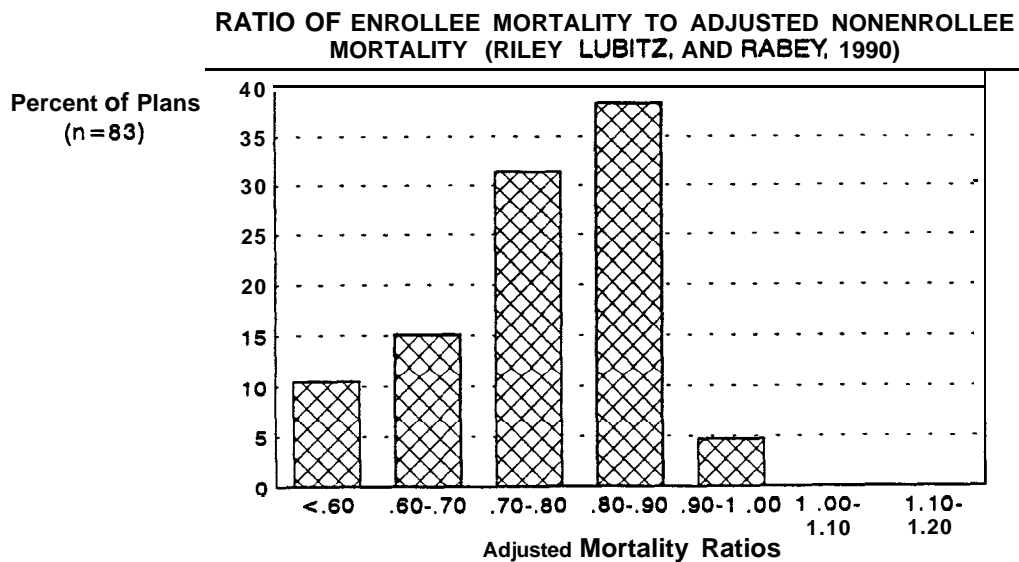
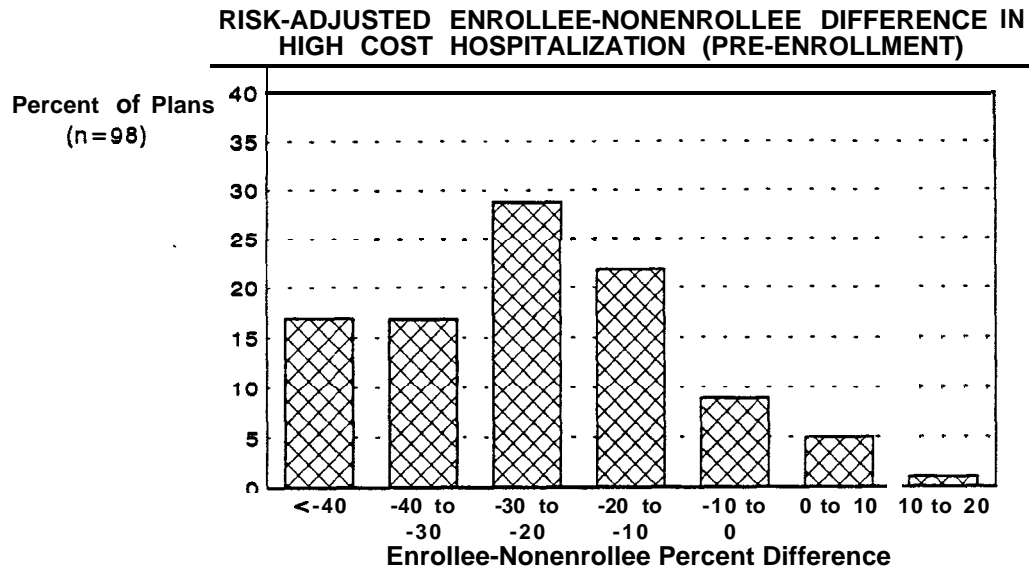
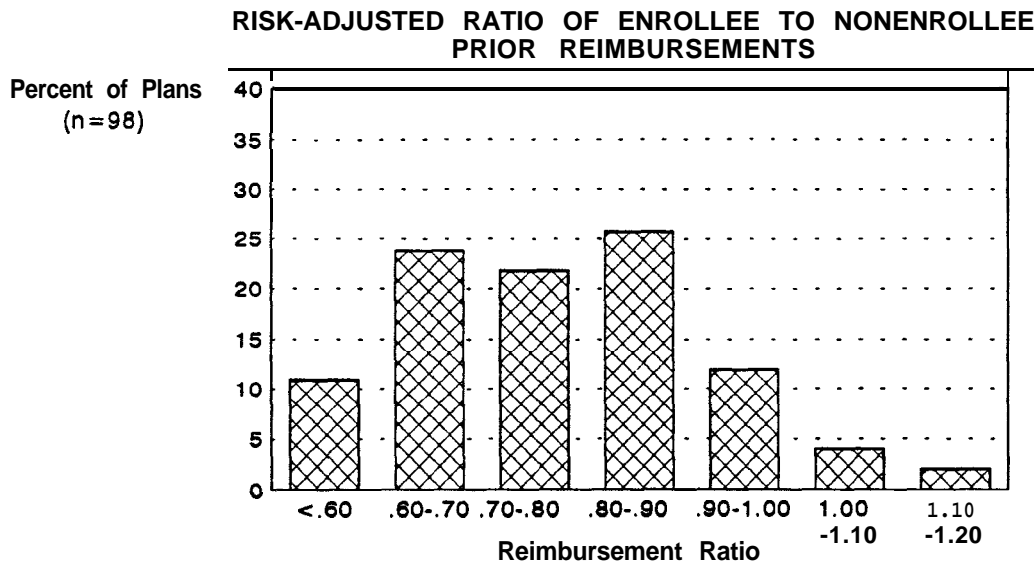
Enrollees were also about 25 percent less likely than nonenrollees to have hospital stays in the preenrollment period for diagnoses associated with high future costs. Again, the enrollee-nonenrollee differences are statistically significant for over half of the plans, always indicating favorable selection. The distribution of estimated differences in high-cost hospitalizations is very similar to the distribution of the prior reimbursement ratios, as shown in Figure 111.1.

The differences in prior reimbursements and hospitalizations for high-cost diagnoses are very similar to those found in a HCFA study (Riley, Lubitz, and Rabey, 1990) for another measure of biased selection--the ratio of enrollee to nonenrollee mortality in the postenrollment period, adjusted for enrollee-nonenrollee differences in AAPCC risk factors. Although the adjusted mortality ratio (AMR) does not measure the expected relative costs for all enrollees, it does capture differences in the prevalence of these high-cost cases. (Average reimbursements for Medicare beneficiaries in their last year of life are about 6 times the average for all beneficiaries.) Furthermore, since mortality is measured in the postenrollment period, this measure of biased selection, unlike the other two, is not

²Enrollee observations were weighted in proportion to the number of months that they were enrolled during the 2-year follow-up period. This weighting essentially adjusts for biases in disenrollment, since HMOs are at risk for a shorter period of time for beneficiaries who disenroll than for those who remain members.

FIGURE III.1

DISTRIBUTION OF PLANS FOR THREE MEASURES OF BIASED SELECTION



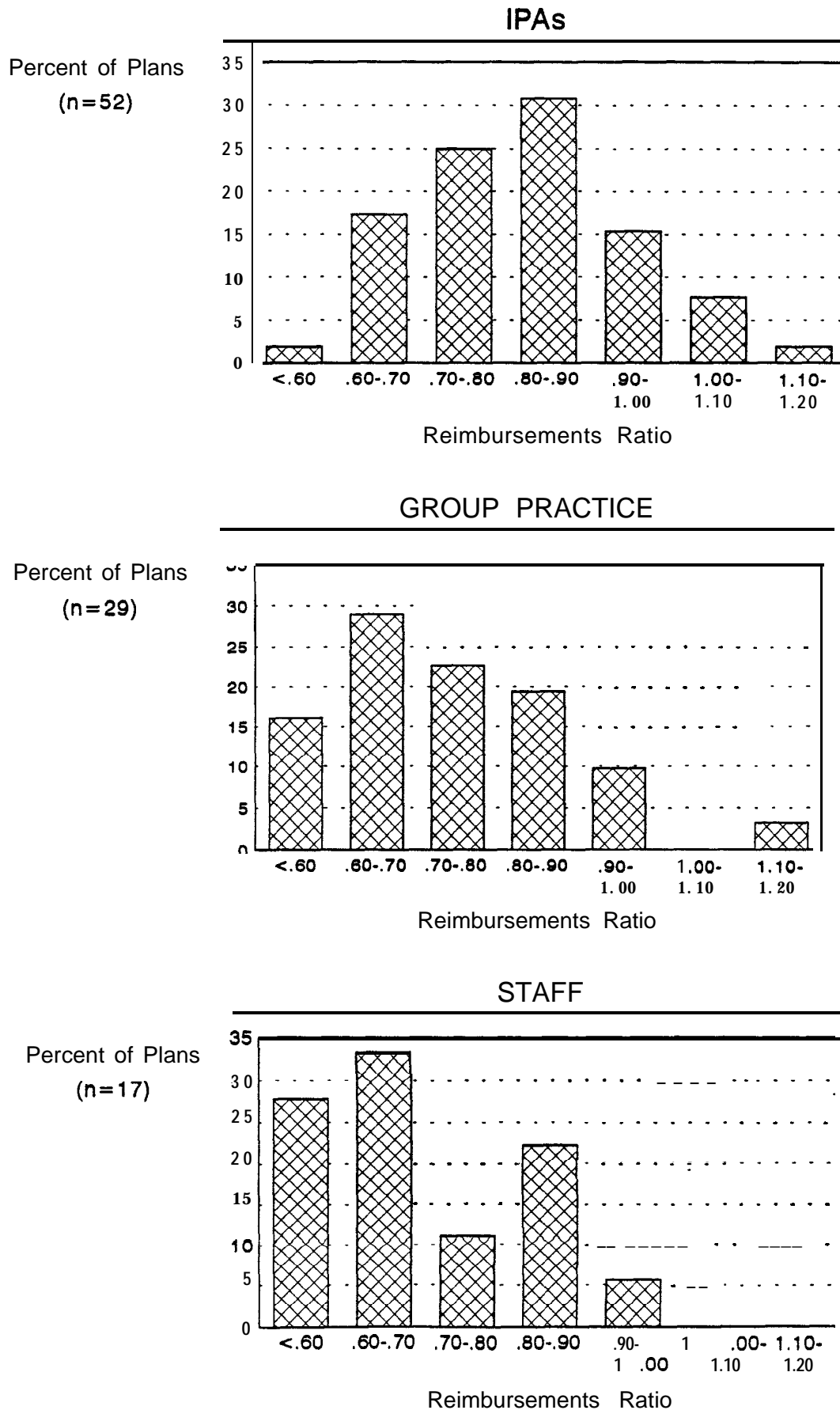
based on the assumption that enrollee-nonenrollee differences during the preenrollment period will persist. The average AMR for the plans in the study was .75, implying that the enrollee death rate was 25 percent lower than the actuarially adjusted rate for Medicare beneficiaries who reside in the same areas. As shown in Figure 111.1, the ratio for every plan was less than one, indicating, once again, either neutral or favorable selection among all the plans. The estimated AMRs of 58 percent of the plans were .80 or less.

The results across the three measures are strikingly similar. All three measures indicate that risk plans experienced favorable selection of 23 to 25 percent overall, 54 to 63 percent of the plans have clearly favorable selection, and none of the plans encountered significant adverse selection. Comparisons across the alternative measures for specific plans showed a fairly strong correlation among the measures, but suggested either that the source of favorable selection (fewer deaths, fewer chronic cases, or lower reimbursements) differed across plans or that the measures may not be especially reliable indicators of the degree of biased selection for a particular plan, due to the modest sample sizes per plan. Nonetheless, the overall similarity of the degree of bias and the distribution of plans across the three measures is strong evidence that biased selection is favorable for most Medicare risk plans.

Across all measures of biased selection, staff models experienced more favorable selection than group practice models or **IPAs**. As illustrated in Figure 111.2, the results for the reimbursement ratio measure are consistent with our expectations that staff plans experience more favorable selection than do **IPAs**, since **IPAs** attract a **sizeable** proportion of their enrollees from the participating physicians' FFS patients. These patients, because they have a regular physician, will tend to have **higher-than-average** utilization. Figure III.2 also indicates that group model plans experienced somewhat more favorable selection than did **IPAs**, but less favorable selection than did staff model plans. This, too, is consistent with expectations, since some but not all group model **HMOs** have physicians who also see non-HMO patients and will attract some of these individuals to the HMO. However, regression

FIGURE III.2

DISTRIBUTION OF PLANS BY THE RATIO OF ENROLLEE TO NONENROLLEE PRIOR REIMBURSEMENTS, BY MODEL TYPE



models showed that group practice plans and **IPAs** experienced about the same degree of favorable selection, once other differences between the two types of plans are taken into account. **Enrollee-**nonenrollee differences in adjusted mortality rates are also similar for **IPA** and group model plans and indicate that selection is less favorable for these model types than for staff model plans (not shown here).

2. A Cross-Section of Enrollees in 1990 Were Healthier Than Nonenrollees and Were Less Prone to Seek Care

To address the several problems with using prior reimbursements to measure biased selection, we compared enrollees and nonenrollees along a detailed set of survey variables. The survey sample, as described earlier, is representative of the stock of enrolled beneficiaries as of April 1990; only 11 percent of the sample had been enrolled for less than one year at the time of interview, and over half had been enrolled for over three years. Hence, most of any regression toward the mean that is likely to take place will have already occurred for our sample. Furthermore, we compared enrollees and nonenrollees along such measures as self-ratings of health, their ability to perform various daily activities, and their attitudes toward health care that are likely to affect health care needs, but may not have been reflected in pre-enrollment reimbursements. Whereas pre-enrollment reimbursements may have been low for some enrollees because their access to care was limited rather than because they were in better health, the survey variables measure health status directly and thus are not subject to this type of distortion.

a. Medicare Risk Plans Are Experiencing Favorable Selection, as Measured by Health Status, Functional Ability, and Attitudes Toward Health Care

Enrollees were significantly healthier than nonenrollees according to several measures of functioning and self-reported health, but the proportions who exhibited various chronic symptoms were virtually identical for the two groups. The proportions of enrollees and nonenrollees with joint pain, chest pain, urinary tract problems, or difficulty with reading, speaking, or hearing were similar.

However, for measures of functioning and health status, fairly sizeable differences exist, only about half of which are attributable to differences in age and other AAPCC factors. After the beneficiary's AAPCC risk factors are controlled for, enrollees were 28 percent less likely to report poor health, had 16 percent fewer impairments in instrumental activities of daily living (IADL) and 22 percent fewer in activities of daily living (ADL), and were 16 percent less likely to report a history of cancer, heart disease, or stroke (see Table 111.1). The magnitudes of these differences are similar for recent and earlier enrollees (not shown), suggesting that regression toward the mean of nonenrollee health status does not explain the findings of favorable selection.

Significant differences in the attitudes of enrollees and nonenrollees toward health care were also found. Enrollees were less likely than nonenrollees to say that they were more worried about their health than most people their age, and were more likely to say that they avoid going to the doctor whenever possible.

b. Both Better Health and a Higher Incidence of Pre-Enrollment Financial Barriers Among Enrollees Contribute to the Enrollee-Nonenrollee Difference in Pre-Enrollment Reimbursements

We also found evidence to support the concern that using prior reimbursements to measure biased selection may overstate the degree of favorable selection due to differences in financial barriers to care. Enrollees would face considerably greater barriers to care than would nonenrollees if they returned to FFS care, because they have lower average incomes (17 percent lower) and are less likely to have Medicaid coverage (2.3 percent of enrollees versus 9.8 percent of nonenrollees). These differences in financial barriers account for about 25 percent of the difference in 1985 reimbursements between enrollees in our survey sample who were not in an HMO in 1985 and nonenrollees in the survey sample. Similarly, controlling for enrollee-nonenrollee differences in health status reduced the differences in reimbursement by 25 percent. Both estimates are crude, because they relate reimbursements in 1985 to beneficiary characteristics in 1990. Nonetheless, they

TABLE III.1

DIFFERENCES IN THE HEALTH STATUS OF ENROLLEES AND NONENROLLEES

Health Indicator	Enrollee Mean	Nonenrollee Mean	Nonenrollee Difference ^b	Regression-Adjusted Difference ^a
Self-Reported Health Status				
Poor	5.4	9.0	-3.6	-2.5 • *
Excellent	27.3	23.3	4.0	2.7 • *
Medical Conditions				
Joint Pain	38.3	40.5	-2.2	-1.0
Chest Pain	9.6	11.0	-1.6	-0.8
Urinary Problem	16.3	16.9	-0.6	0.0
History of Cancer, Heart Disease, or Stroke	27.5	32.1	-4.6	-5.0 **
Any Bed Days in Past 2 Weeks	6.9	10.3	-3.4	-1.7 • *
Functional Impairments				
IADLs, Unable to:				
Take medication alone	4.1	8.3	-4.2	-1.8 • *
Cook for self	5.7	10.9	-5.2	-2.3 • *
Pay bills by self	7.4	12.8	-5.4	-2.2 **
Travel alone	10.9	16.9	-6.0	-2.6 **
Shop alone	12.0	18.6	-6.6	-2.8 **
Heavy housework	23.5	33.5	-10.0	-6.0 • *
ADLs, Unable to:				
Feed self	0.7	1.7	-1.0	-0.4 • *
Get in and out of bed alone	1.8	4.4	-2.6	-0.9 **
Groom self	1.7	4.5	-2.8	-1.3 **
Dress/undress self	2.5	5.7	-3.2	-1.4 **
Bathe self	4.9	9.7	-4.8	-2.5 **
Number of IADL Impairments (0 to 6)	.67	1.12	-.45	-.18 **
Number of ADL Impairments (0 to 5)	.13	.32	-.19	-.07 • *
At Least One IADL Impairment	29.4	40.4	-10.8	-5.6 **
At Least One ADL Impairment	6.3	12.5	-6.2	-2.8 • *
Other Functional Impairments				
Difficulty Reading	16.9	20.3	-3.4	-1.3
Difficulty Hearing	24.8	25.2	-0.4	0.3
Difficulty Speaking	3.8	4.6	-0.8	0.2
Sample Sizes	6,091	6,029	12,120	12,120

^aEnrollee-nonenrollee differences were based on regression models which controlled for AAPCC risk classification and enrollment status.

^bHypothesestests were not performed on the difference between the raw means of enrollees and nonenrollees, since our focus was on the regression-adjusted difference reported in column 4.

• * Significant at the .05 level, two-tailed test.

• * Significant at the .01 level, two-tailed test.

indicate that both health status and financial barriers contribute to the enrollee-nonenrollee difference in total reimbursements prior to enrollment.

3. **HCFA Pays 5.7 Percent More for Enrollees Than it Would Have Spent on Them Under FFS Care**

Due to the favorable selection experienced by Medicare risk plans, it appears that HCFA is spending 5.7 percent *more* than they would have under **FFS** care for the beneficiaries enrolled in the program, rather than saving the anticipated 5 percent.

a.. Cost Increases Are Due to Differences in Health Status and Attitudes Toward Health Care, But Are Not Due to Difference in Access to Care

As indicated in section C.2, several characteristics associated with high service use were less prevalent among enrollees than nonenrollees. Enrollees in Medicare risk plans were less likely to report poor health, to report functional impairments, and to have a history of serious illness (cancer, heart disease, or stroke), and were also less likely to die in the g-month period after the survey interview. Compared with nonenrollees, enrollees also had a lower propensity to use services, as measured by the higher proportion of enrollees who said that they avoid seeing a physician when a health problem arises, and the lower proportion of enrollees who worry more about their health than do their peers. Thus, by all measures of health and attitudes toward health care, enrollees were expected to use less services than nonenrollees.

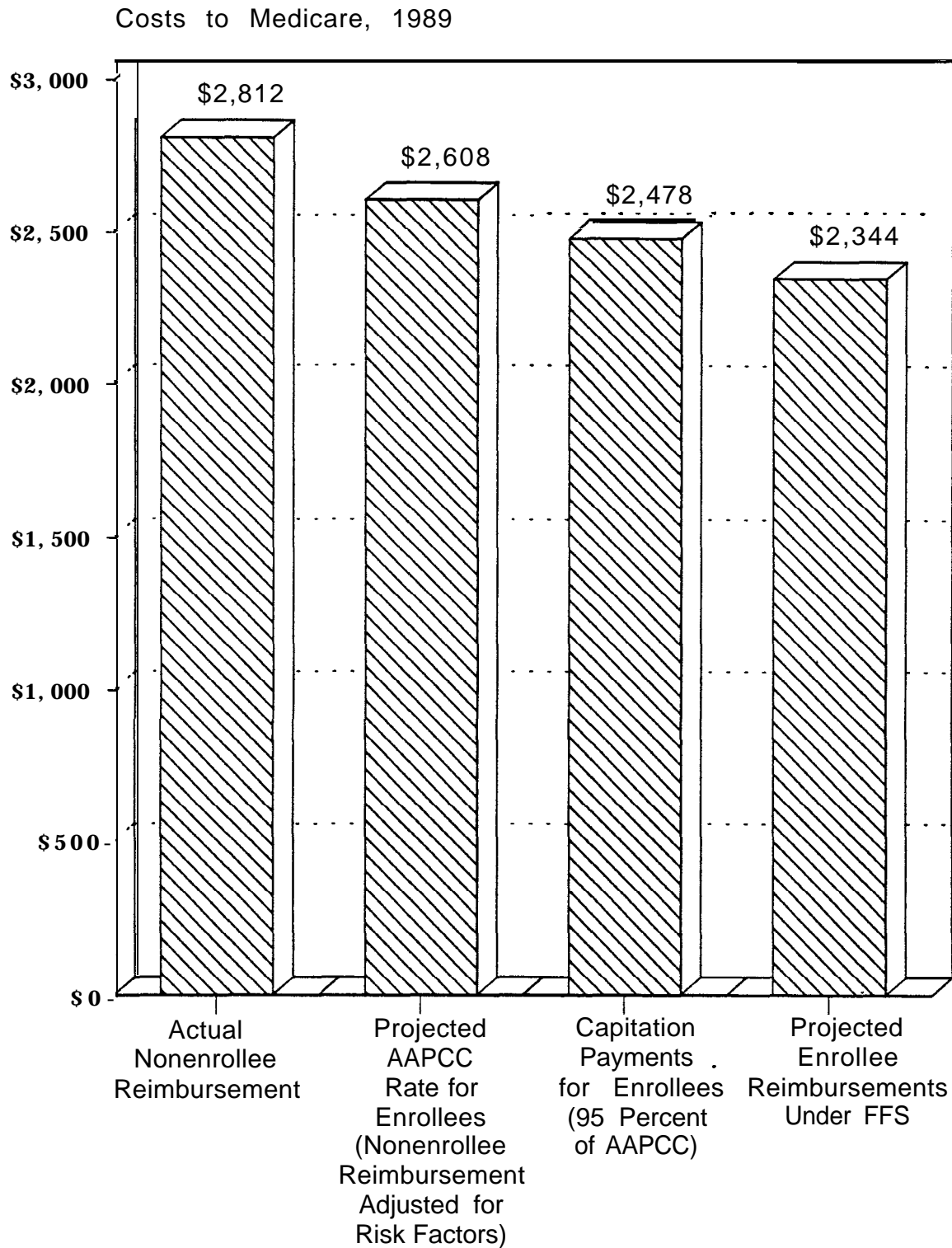
These differences led to the projected overpayment to **HMOs** for providing Medicare-covered services. Our regression analysis shows that these **measures** of health status and propensity to seek care have statistically significant and **sizeable** effects on the Medicare reimbursements of nonenrollees. Whereas the AAPCC model explains only about 2 percent of the variance in annual -reimbursements for nonenrollees (consistent with the findings of other studies), the model that predicts reimbursements with the full set of survey characteristics explains over **7** percent of the variance. The estimated models and the personal characteristics of enrollees were used to predict the amount that

Medicare paid in capitation payments and the FFS costs that would have been incurred for enrollees had they not enrolled. We found that the average actual FFS costs for nonenrollees (\$2,812) are about 20 percent higher than the average projected Medicare FFS costs for enrollees (\$2,344) (see Figure 111.3). After adjusting nonenrollee costs to eliminate any cost differences that could be accounted for by enrollee-nonenrollee differences in factors controlled for by the AAPCC, we found that the difference is cut nearly in half, but even adjusted nonenrollee costs (\$2,608) are 11 percent higher than predicted costs for enrollees (again see Figure 111.3). Thus, the actuarial risk factors used to determine capitation payments fail to account fully for enrollees' better health status and different attitudes toward health care, and, consequently, AAPCC rates exceed what the FFS costs to Medicare would have been by an average of 11 percent. Thus, while HCFA pays HMOs 95 percent of the AAPCC, the reimbursements for enrollees, had they stayed in FFS, would have only been about 90 percent of the AAPCC. This overprediction of costs by the AAPCC methodology translates into a 5.7 percent increase in costs to HCFA ($.95/.899 = 1.057$). The estimated increase is significantly different from zero at the .01 significance level, and a 95 percent confidence interval constructed about the estimated increase suggests that, taking sample variation into account, the true increase in cost is expected to be between 2.4 and 9.1 percent.

Most of the increase in cost to HCFA was for Part A services. AAPCC payments exceeded costs by about 8.5 percent for Part A services (hospital, SNF, and home health care) and by only 2.7 percent for Part B services (primarily mainly physician services, laboratory tests, and X-rays). Since Part A services account for approximately 53 percent of the total reimbursements that would have been paid for enrollees had they remained in the FFS sector, Part A cost increases account for over three-fourths of the 5.7 percentage point increase in costs, and Part B cost increases-account for the remaining 1.3 percentage points.

FIGURE III.3

**AVERAGE COSTS TO HCFA FOR
ENROLLEES AND NONENROLLEES**



	Actual FFS Cost for Nonenrollees	Projected AAPCC Rate for Enrollees	Project Payment to Plans (.95 * AAPCC)	Projected costs Under FFS	Cost Increase to HCFA per Enrollee
Part A -	\$1,588	\$1,385	\$1,316	\$1,213	\$103 (8.5%)
Part B	\$1,254	\$1,223	\$1,162	\$1,131	\$ 31 (2.7%)
Total	\$2,812	\$2,608	\$2,478	\$2,344	\$134 (5.7%)

An examination of the sources of the cost increase showed clearly that the major contributing factors to the cost increases were the failure of the AAPCC risk indicators to fully capture the effect of the difference on health status measures for enrollees and nonenrollees, and the large effects that these health status measures have on FFS reimbursements. The enrollee-nonenrollee differences in health status measures accounted for approximately 83 percent of the difference between the AAPCC and projected FFS costs, differences in attitudes toward health care accounted for 14 percent, and the remaining 3 percent was due to differences in income and demographic factors, such as education, race, and whether the beneficiary lived alone. One variable alone, ***a history of cancer, heart disease, or stroke, accounted for 38 percent of the explainable difference between the AAPCC rate and projected FFS costs.***

b. Costs Increases Generated by the Program Are Greater for Staff Model Plans, High-AAPCC Areas, and Plans The Do Not Charge a Premium

AAPCC payments exceeded projected FFS costs for every subgroup examined, but by a greater margin for some types of plans and market areas than others. As shown in Table 111.2, staff model plans experienced the most favorable selection, increasing costs to HCFA by 7.8 percent versus cost increases of 4.4 percent for group model plans and **IPAs**. The result that staff model plans experienced the most favorable selection is consistent with the findings from our examination of pre-enrollment reimbursements, despite the differences in the composition of the samples and the measures used in the studies.

TABLE III.2

AVERAGE COSTS TO HCFA FOR ENROLLEES IN PLANS WITH DIFFERENT CHARACTERISTICS

Plan Characteristics	Sample Size	Predicted AAPCC Payment (1989)	Predicted FFS cost (1989)	cost (Savings) to HCFA	Percentage Cost (Savings) to HCFA
Overall	6,475	62,477	\$2,344	\$133	5.7 %
Model Type					
IPA	2,624	52,455	\$2,352	\$103	4.4 %
Group	1,873	\$2,306	\$2,207	\$98	4.4 %
Staff	1,978	52,626	\$2,435	\$191	7.8 %
Tax Status					
Nonprofit	3,030	\$2,267	\$2,169	597	4.5 %
For-profit	3,445	\$2,631	\$2,471	\$160	6.5 %
Premium (1989)					
0	1,947	\$2,720	\$2,511	\$208	8.3 %
\$1 - \$50	3,330	\$2,399	\$2,296	\$103	4.5 %
> \$50	1,198	\$2,107	52,067	540	2.0 %
Enrollment Size (1/89)					
< 10,000	2,353	\$2,121	\$2,024	\$97	4.8 %
10,000 - 20,000	1,084	\$2,209	\$2,091	\$118	5.6 %
> 20,000	3,038	\$2,689	\$2,538	\$152	6.0 %
County AAPCC Rate (1989)					
< \$275	1,837	32,137	\$2,010	\$127	6.3 %
\$275 - \$325	3,008	\$2,424	\$5335	\$90	3.8 %
> \$325	1,630	82,787	32,591	\$196	7.6 %

Cost increases are greatest for enrollees in plans that do not charge a premium and plans in market areas whose AAPCC rates are high. Enrollees in plans that do not charge beneficiaries a premium for providing coverage of supplemental services cost HCFA 8.3 percent more than they would have in the **FFS** sector, compared with cost increases of only 2 percent for enrollees in plans charging over \$50 per month and 4.5 percent for those charging \$1 to \$50. This result is not surprising, since more favorable selection enables plans to offer supplemental coverage for lower or zero premiums. Similarly, plans in market areas whose AAPCC rates were high (over \$325 per month) generated cost increases of 7.6 percent in 1989, **twice** the 3.8 percent loss incurred by HCFA for enrollees in **HMOs** whose AAPCC rates were \$275 to \$325 per month. Apparently, **HMOs** in areas whose AAPCC rates are high are just as able to enroll a disproportionately high number of beneficiaries whose demand for health care is low.

D. DISCUSSION

The clear message from our analyses of biased selection and net costs or savings to HCFA is that HCFA is not achieving its goal to save money through the Medicare risk program. In fact, program costs per enrollee were 5.7 percent greater than the reimbursements that would have been paid for enrollees had they received care under the traditional fee-for-service arrangement. This increase in costs, if applied to the **capitation** payments for the entire program for June 1992 (\$578 million), implies that costs to HCFA for beneficiary care are approximately \$31 million more per month than they would have been without the risk program.³ And this calculation does not include the cost to HCFA for administering the risk program, which includes calculating the AAPCC annually, operating the Peer Review Organization (PRO) oversight program to monitor the quality of care, recording enrollments and disenrollments, paying the plans, and monitoring the program.

³The AAPCC payments of \$578 million per month would be only \$547 million if the payments were equal to the projected FFS costs rather than exceeding them by 5.7 percent.

HCFA is spending more money on the currently enrolled population than it would have spent had enrollees remained in FFS care, because enrollees are healthier than nonenrollees according to virtually every measure examined, and because they are less inclined by nature to seek health care. The current set of risk factors used in the AAPCC fail to account for this favorable selection. Our findings hold for both new enrollees and the existing stock of members, and they are not explained by differences in access to care that enrollees may have faced before joining. The favorable selection is less marked for some types of **HMOs** (for example, **IPAs**) and market areas (those with low AAPCC areas) than others, and may not exist at all for particular **HMOs**, but is present to some degree for any subgroup of **HMOs** examined.

The results suggest that some type of health status adjuster may be required. Nor surprisingly, HCFA has had little success in getting **HMOs** to participate in a demonstration that would adjust AAPCC payment rates according to whether beneficiaries had previously been hospitalized for any diagnosis associated with higher-than-average future costs (diagnostic cost groups, or **DCGs**). Under the DCG demonstration, payment rates were higher than the usual AAPCC for such enrollees, while payments for enrollees without such prior hospitalizations were lower than the usual AAPCC. While some **HMOs** which believe that they experience adverse selection expressed an interest in a health status adjuster, the lack of interest in the DCG demonstration suggests that most **HMOs** realize that such an adjuster would lead to lower rather than to higher capitation payments.

The results also suggest that proposals to raise capitation to 100 percent of the AAPCC to encourage greater HMO participation in the program should be evaluated carefully. With the current payment methodology, such proposals are almost certain to generate much greater costs for the Medicare program, at least in the short run.

IV. DO **HMOs** REDUCE THE UTILIZATION OF MEDICARE-COVERED SERVICES?

The premise of the Medicare risk program is that **HMOs** can prosper even if they are paid less than the FFS sector for Medicare-covered services by reducing the unnecessary and inefficient use of health care resources. **HMOs** are believed to achieve most of their savings by reducing the utilization of inpatient hospital services, presumably by substituting less expensive types of care--including outpatient care, nursing homes, home health visits, therapeutic drugs, and ambulatory care--for a hospital stay or for a portion of the stay. However, **HMOs** also have an incentive to limit the use of all services to levels that are medically appropriate and necessary for the patients' health. Our results suggest that **HMOs** do indeed reduce the rate of utilization of some of these services, not by reducing the number of individuals who receive the service, but by limiting the amount of the service rendered.

A. THE EXPECTED EFFECTS OF **HMOs** ON SERVICE USE

The ability of **HMOs** to provide health care more efficiently than the FFS sector is critical for enabling the Medicare HMO risk program to reduce the costs to Medicare from what they would be under FFS. **HMOs** may prosper under the program if they experience favorable selection (see Chapter III), but that situation actually **increases costs** to HCFA and is thus not viable in the long run. To enable **HCFA** to save money and **HMOs** to earn a fair rate of return simultaneously, **HMOs** must reduce the amount spent on medical care for enrollees relative to what would have been spent in the FFS sector. While price discounts negotiated by **HMOs** will help achieve this goal, the major source of cost-savings for the HMO must be a reduction in the rates of service utilization relative to those in the **FFS** sector.

1. Why HMOs Are Expected To Provide Care More Efficiently

HMOs are expected to provide care more efficiently than the FFS sector for two reasons--the economic incentives to do so, and their unrestricted ability to coordinate patient care. The economic incentives are obvious; since HCFA is paying HMOs a fixed amount (5 percent less, in fact, than it would expect to pay under conventional FFS arrangements), HMOs increase their profits by one dollar for every dollar they reduce their costs. Such incentives are uncommon in the FFS sector, and are tied less closely to the decision-making provider. For example, a FFS physician has no incentive to transfer a patient from a skilled nursing facility (SNF) to home health care, and it is clearly not in the financial interest of the SNF that the physician do so. While Medicare's prospective payment system (PPS) for hospitals gives hospitals the same incentive as HMOs to discharge patients as soon as possible, the incentive is blunted because physicians, not hospitals, control the discharge of patients. Fee-for-service physicians have no economic incentive to seek alternatives to a hospital admission, to develop the most cost-effective discharge plan for patients who are admitted, or to minimize the use of consulting physicians. Furthermore, although PPS gives FFS hospitals the incentive to shorten stays, it also creates an incentive to make the patients' condition appear as severe as possible, to maximize the fixed diagnosis-related group payment that is received (known as "DRG creep"). While this practice does not lengthen hospital stays, it does increase costs in the FFS sector. HMOs, on the other hand, have the incentive to limit medical care to that which is medically appropriate and necessary, and have no opportunity to increase their reimbursements from HCFA by overstating patients' illnesses.

The ability of HMOs to coordinate care in the most effective way possible is at least as important as their economic incentives, because it enables HMOs to respond to these incentives. Greater coordination in HMOs is due in part to how they are organized and in part to the fact that they are not subject to certain HCFA rules and regulations about the circumstances under which given types of care will be covered by Medicare. For example, HMOs use primary care "gatekeepers" to control

and manage the access of beneficiaries to services, thus mitigating duplicative tests and X-rays by different providers, the prescription of conflicting treatments (for example, by surgeons or specialists versus primary care physicians), and the unnecessary use of specialists. Too, the freedom from various Medicare restrictions enables **HMOs** to substitute less expensive homemakers (not covered by Medicare) for home health aides when appropriate, and to use skilled nurses, **SNFs**, and home health aides as the HMO sees fit, rather than according to HCFA requirements. (For example, a patient can be sent to a **SNF** without having a preceding **3-day** hospital stay.) Furthermore, less time must be spent on completing Medicare certification forms.

HMO case management exemplifies a combination of the two factors that compel and enable **HMOs** to provide care more efficiently. Many **HMOs** apply case management to inpatient cases--often arranged by a nurse--to recommend the optimal length of stay in the hospital, **SNF**, or home care regimen, determine the most appropriate destination upon discharge, and arrange for access to necessary care. While individual physicians in the FFS sector are responsible for discharging patients and referring them to other types of care as necessary, they rarely coordinate such care for the patient or ensure access to services. FFS physicians have neither the resources nor the incentive to perform such services, since case management is not covered by Medicare and may in fact take income away from the physician. Conversely, **HMOs** benefit from providing care efficiently, and are sufficiently large that they **find** it advantageous to provide this support to their physicians. The case management and utilization review procedures of **HMOs** also educate physicians about how they can provide care more efficiently; no such incentive or opportunity exists for most FFS physicians.

These arguments for greater HMO efficiency do not necessarily imply that utilization rates for every resource will be lower among beneficiaries in the **HMOs** than among those in the FFS sector. The substitution of less expensive services for higher-cost ones may increase the rates of utilization of less expensive services by enrollees relative to nonenrollees. Too, the emphasis on and coverage

of preventive care by **HMOs** also contrasts with the FFS sector and could increase the utilization of physician services.

2. Previous Studies Indicate That HMOs Reduce Hospital Utilization Substantially, but Do Not Affect Physician Visits

Previous studies of the impact of **HMOs** on the use of medical care services, most of which have focused on nonelderly HMO members, suggests that **HMOs** reduce hospital admissions and days substantially, but have little effect on physician services. Luft (1981) reviewed several studies of the impacts of **HMOs** on utilization that were conducted between 1950 and 1978, and found that **HMOs** reduce hospital days by 10 to 40 percent among the **nonaged** population. This reduction was due primarily to a reduction in the rates of hospitalization, not to lengths of stay, though some studies from this period found that **HMOs** did reduce average lengths of stay. The use of outpatient services by HMO patients varied considerably, with some **HMOs--especially IPAs--exhibiting** higher utilization rates than in the FFS sector. **The** greater use of outpatient services is consistent with the notion that **HMOs** have a financial incentive to substitute less expensive outpatient procedures for inpatient care. However, the concentration of higher use among **IPAs** may reflect a higher incidence of adverse selection (or a lower incidence of favorable selection) among this type of HMO model. Luft cautions that many of the studies examined a limited number of variables (often only age and gender) to account for differences in the health of patients from **HMOs** and the FFS sector; hence, the estimated impacts of **HMOs** on service utilization may reflect favorable selection rather than a true HMO impact.

Later studies, which relied on more rigorous analytical designs or on data that controlled for differential health risks, also show a reduction in hospital use among HMO members. Manning et al. (1984) reported that the **HMOs** participating in the Health Insurance Experiment (**HIE**) reduced hospitalizations by 40 percent relative to FFS plans. Since individuals in that study were assigned randomly to the HMO or FFS plans, the study is often quoted as evidence of an HMO impact that

does not suffer from selection bias. However, Welch et al. (1987) criticized the study's random assignment procedures, noting that 29 percent of those contacted to participate in the study refused to do so, which Dowd et al. (1991) noted could lead to biased estimates. In their own study, Dowd et al. used an econometric model to control for biased selection in **HMOs** in the Minneapolis area, and found that the **HMOs** reduced hospital days by about 30 percent, but had little effect on physician visits.

Two more recent studies (Stern et al., 1989; and Bradbury, Golec and Stearns, 1991) investigated the impact of **HMOs** on hospital length of stay and found that **HMOs** reduce stays by 14 percent on average. The studies are noteworthy in that they show an HMO impact on length of stay after controlling for diagnosis, health risks, and the severity of illness. However, they are based on a small number of **HMOs** (only one in Stern et al.) and hospitals.

Only two studies have investigated the impact of **HMOs** on service utilization among the Medicare population, but both indicate that **HMOs** can reduce service use. Nelson and Brown (1989) evaluated the impact on hospital use among 9 **HMOs** in the Medicare Competition Demonstrations and found that hospital admission rates among HMO enrollees in their first two years of enrollment fell by 8 percent. The authors reported evidence of a start-up effect--that is, a higher rate of service utilization by enrollees in their first year of enrollment. This effect is reflected in the greater reductions in hospitalization rates in **HMOs** in the second year, which ranged from 14 to 28 percent. However, as with earlier studies, the set of variables available to control for biased selection was quite limited. McCombs, Kasper, and Riley (1990) examined the impact of two Medicare Demonstration plans on the costs of providing services to Medicare beneficiaries in the first two years of enrollment, and found that one plan had lower costs and the other higher costs than did FFS Medicare. Once again, a start-up effect was evident, since costs for both plans were lower than those in the FFS sector in the second year; again, however, the set of control variables was limited. The authors were unable to estimate reductions in the use of specific services.

The **sizeable** HMO impacts on the rates of hospitalization reported in these previous studies may well be overstated due to favorable selection; but even if they are accurate, the impacts of **HMOs** in the current Medicare risk program may be considerably smaller. As Chapter II illustrated, rates of hospitalization and average lengths of stay among Medicare beneficiaries in the **FFS** sector have been heading downward during the 1980s (see also **ProPAC**, June 1991, pp. 87-88). **The** reasons for the decline in lengths of stay are attributable at least in part to the introduction of PPS, which gives hospitals an incentive to reduce lengths of stay. Furthermore, growing pressure from commercial insurers to reduce hospital use among the nonelderly (for example, by requiring **precertification** for admissions) may have contributed indirectly to the decline in use among Medicare beneficiaries, as physicians learn to substitute other modes of care. The decline in hospitalization rates and lengths of stay provides evidence of efficiency gains in Medicare's FFS sector, and suggest that **HMOs** may not be able to achieve the same percentage reductions in hospital utilization relative to the FFS sector that are reported in earlier studies, even if those earlier estimates were accurate.

A second reason for expecting smaller HMO impacts in this study than those **cited** in the literature is that the major body of empirical evidence on the impacts of **HMOs** pertains to the **non-Medicare** population. The impacts of **HMOs** on the Medicare population are not as large according to the limited evidence available (Nelson and Brown, 1989; and **McCombs**, Kasper, and Riley, 1990). Hospital admissions may be less discretionary for the elderly than for younger beneficiaries, and recuperation at home often may not be an option for elderly enrollees, since many live alone or with an elderly spouse with their own health problems.

3. **Questions Addressed**

We examined the impacts of the risk program on the utilization of the four major health care services covered by Medicare: hospital stays, SNF stays, home health visits, and visits to physicians. Impacts on two aspects of service use were estimated for each of these services:

- Whether the service was received
- The amount of the service received

We also estimated the impacts for different types of **HMOs** and beneficiaries, to determine whether some types-of **HMOs** were especially successful at reducing use, and whether **HMOs** were able to reduce service use only among certain types of beneficiaries.

In addition to testing hypotheses about whether **HMOs** reduce service utilization and measuring the magnitude of these effects, we conducted a case study to determine how successful **HMOs** are at achieving these gains in efficiency. For this analysis we interviewed a select group of **HMOs** that appeared to be implementing effective managed-care practices and to be operating successfully as Medicare risk plans. The **HMOs** that were interviewed were asked about the types of financial incentives and utilization management procedures they use, and those that they considered to be most effective.

B. DATA AND RESEARCH APPROACH

The research issues were addressed in two reports--Hill et al. (1992), which examined the impacts of **HMOs** on the use and cost of services, and Hurley and **Bannick** (1992), which explored the information supplied by **HMOs** on how they controlled utilization.

1. The Analyses Were Based on Survey Data and HMO Interviews

The estimated impacts of **HMOs** on service use were derived from analyses based on the survey data described in the previous chapter and in Appendix B. For each of the nearly 13,000 sample members, data were collected on (1) the approximate date of admission and the length of each hospital and nursing-home stay that occurred during the 12 months before the interview, (2) the number and type of home health visits received in the past 3 months, and (3) the number of visits to physicians in the past month and the number of such visits “normally” made in the course of a year. These data yielded variables for the number of admissions and the number of days of hospital and

nursing-home use, the number of home health visits by a nurse or therapist, the number of home visits by a home health aide, and the number of visits to a physician. The survey also collected data on characteristics that might have affected the use of services, which served as control variables in the statistical analyses. These variables were the same as those used in the cost regressions described in the previous chapter--the AAPCC risk factors, health status and functioning measures (activities of daily living, self-rating of health, and history of heart attack, stroke, or cancer), attitudes toward health care (relative degree of worry about health, and a tendency to avoid physicians), access-to-care measures (income), and demographic factors (living alone, education, and race).

Detailed data for the case study on managed-care practices were gathered from semi-structured telephone interviews with utilization managers for 13 judgmentally selected **HMOs** and from more in-depth in-person interviews at 5 of these **HMOs**. The interviews collected data on the financial incentives imposed by the **HMOs** on the physicians (for example, **capitation** and bonus pools), hospital days per 1,000 Medicare members, utilization management practices, and whether utilization management practices for the HMO's Medicare plan differed from those for its commercial plans. HMO respondents were also asked for their opinion about which procedures were most effective.

2. Design of the Analyses

Estimates of the impacts of **HMOs** on utilization were based on a comparison of average use among enrollees and nonenrollees, controlling for the AAPCC characteristics, site, and other beneficiary characteristics that were likely to be associated with service use. The comparison was conducted with regression analysis, in which service use was expressed as a function of a binary variable indicating enrollment status and the control variables. The coefficient on the enrollment variable provided the estimate of the impact of Medicare risk plans on service use. For binary dependent variables, such as whether the beneficiary had been admitted to a hospital during the year, **probit** models were used to estimate the impact of **HMOs** on the probability of using the service. Other statistical models were examined to account for possible unobserved differences between the

two groups of beneficiaries, and to account for the fact that the utilization of any particular services over the time period examined was zero for a large proportion of the sample. The estimates from these alternative models were quite similar to those obtained from the more straightforward regression models. In most cases, the impacts are expressed as a percentage of the predicted mean for enrollees had they never enrolled--that is, the impact is divided by the unadjusted mean for enrollees minus the HMO impact.

For the case study, **HMOs** were judgmentally selected, based on model type, geographic location, size, reputation for being well-managed, and length of experience in the risk program. We attempted to select **HMOs** that were known to operate a successful Medicare risk plan, in order to determine what factors contributed to their success. Once the 13 **HMOs** to be interviewed were selected, the person responsible for utilization management (UM) was identified and asked to complete a telephone interview. These responses were used to compare the UM practices of **HMOs** and to select plans for the in-person interviews. For each plan selected for a site visit, a series of additional questions were prepared to probe more deeply into UM issues that pertained to the particular HMO. The on-site interviews focused on identifying any aspects of the plan's UM practices that appeared to distinguish it in some way from the others. The data were then used to construct a profile of each of the **HMOs**, and to draw some possible conclusions about whether the keys to having a successful risk plan were specific to the individual **HMOs** or whether they also characterized other **HMOs**.

C. THE IMPACTS OF THE RISK PROGRAM ON THE USE OF SERVICES

Despite the fact that HCFA does not save money on the Medicare risk program, we found that the ***potential*** for savings exists, because **HMOs** do reduce the utilization of some expensive services. However, some of these findings were somewhat unexpected.

1. Medicare Risk Plans Reduce Hospital Length of Stay, but Not Admissions

HMOs did not reduce rates of hospitalization, but did reduce the number of hospital days (and average length of stay) by about 17 percent (see Figure IV.1). This finding that HMOs have no impact on the hospitalization rate contrasts with the **sizeable** reductions found in previous studies of the impacts of HMOs on hospital use among the non-Medicare population, and with the few studies on the Medicare population. However, as noted earlier, these previous studies were subject to serious weaknesses, due to the limited data on the characteristics of enrollees and nonenrollees for use as control variables. Our estimated impact of HMOs on the hospital admission rate would be much larger and statistically significant (2.7 percentage points, or about 15 percent of the mean) if we used only AAPCC factors as the control variables, rather than our more comprehensive set of characteristics. Furthermore, general medical practice has responded to financial incentives to eliminate discretionary hospital admissions, which is not reflected in earlier studies of HMO impacts. Thus, the ability of HMOs to secure further reductions in admission rates may be quite limited for either Medicare or non-Medicare members.

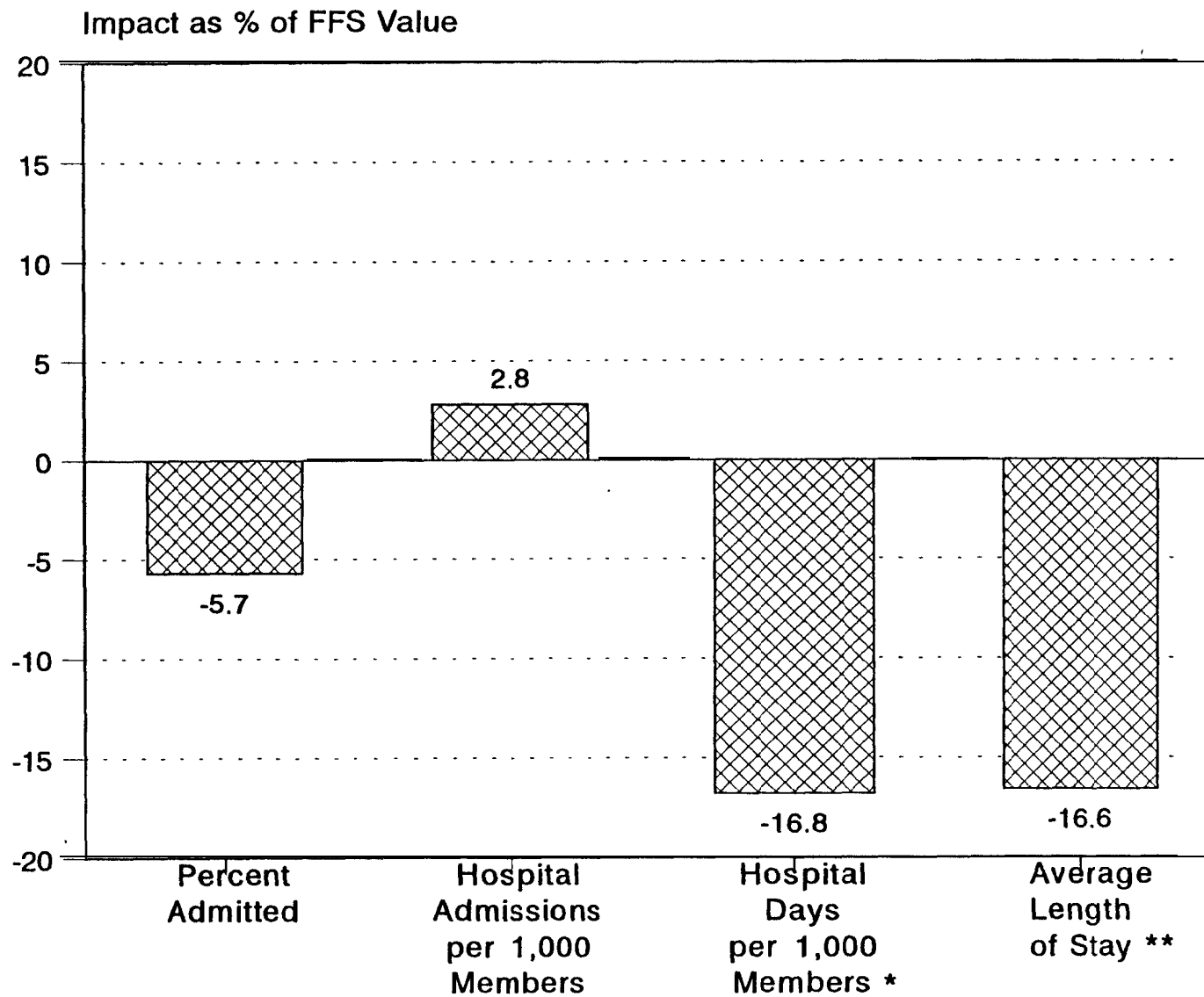
The 17 percent reduction in hospital days and average length of stay is quite consistent with recent findings in the literature for the non-Medicare population (14 percent reductions cited in Stearn et al., 1989, and Bradbury et al., 1991) and with an independent source of data used in the quality-of-care component of our evaluation of the Medicare risk program (described in Chapter V). The reduction in hospital length of stay is particularly impressive, given the incentives under Medicare's prospective payment system (PPS) to reduce lengths of stay in the FFS sector.

2. Medicare Risk Plans Increase the Likelihood of Having Some Physician Visits, but Reduce the Likelihood of Having Frequent Visits

Medicare risk plans increased the likelihood of having at least one visit to a physician during the year by about 5 percentage points (from 84 to 89 percent). Enrollees were also 6 percentage points more likely to have received a physical examination in the past year than were comparable

)

FIGURE IV.1 HMO IMPACTS ON THE USE OF INPATIENT SERVICES



NOTE: FFS values are regression adjusted (enrollee mean minus regression adjusted estimate of impact)

* Statistically significant difference at the .10 level, two-tailed test.

** Statistically significant difference at the .05 level, two-tailed test.

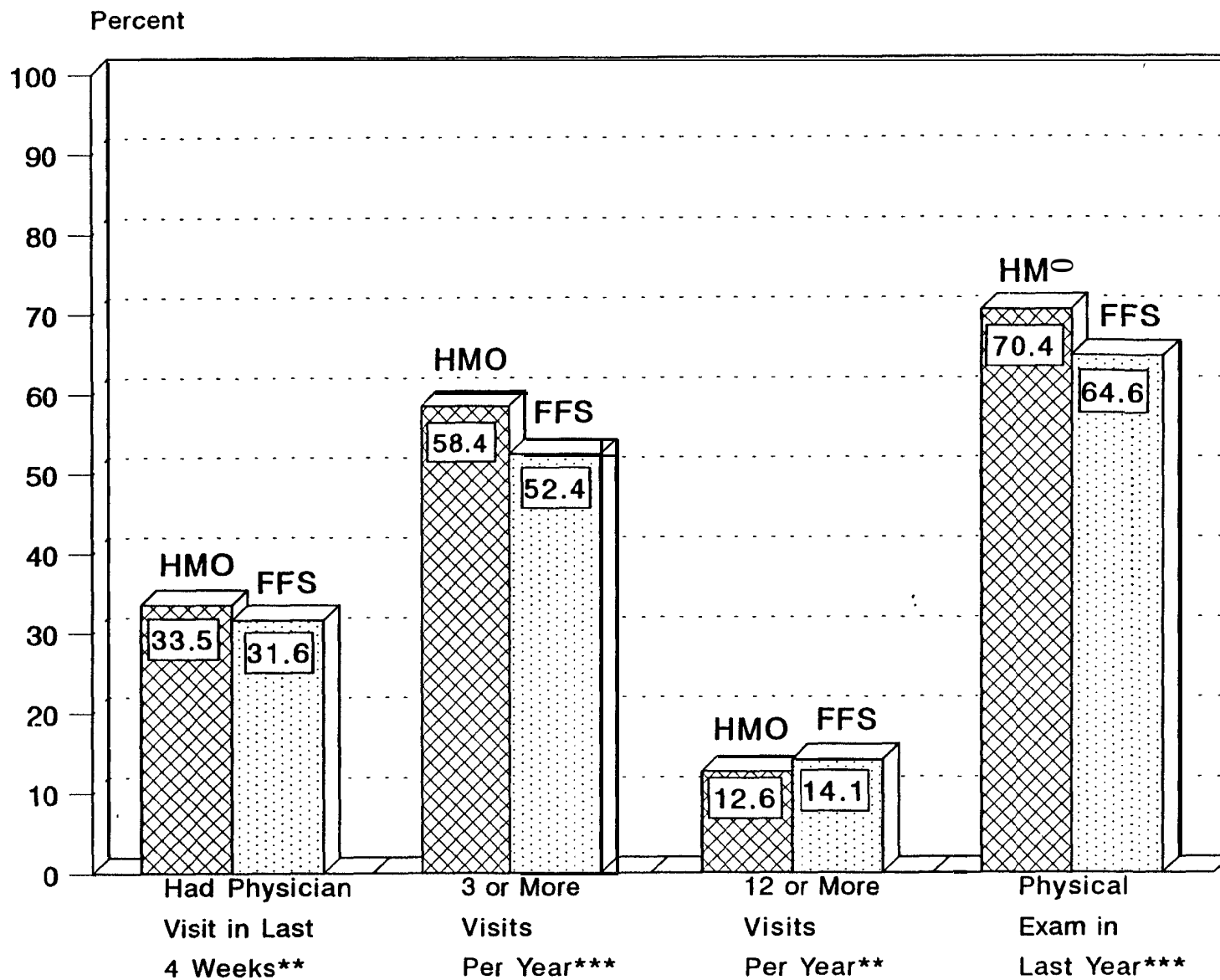
nonenrollees (see Figure IV.2). However, enrollees were significantly less likely to report frequent visits to a physician (12 or more a year). The results are consistent with the financial incentives facing both enrollees and HMO physicians. In most Medicare risk plans, beneficiaries face little or no copayments for primary care visits, and are typically offered preventive care as part of their benefits package. Thus, because enrollees face little or no financial barriers to receiving care from their primary care physicians, we would expect that they would be more likely to have some physician visits than would nonenrollees with the same health status, attitudes toward health care, and other characteristics.’ However, HMO physicians--in particular, those under capitation or profit sharing--have a financial incentive to reduce the number of visits per patient and to see more patients. Thus, we observe no HMO effect on the average number of visits in the past month (about .6 visits per beneficiary) and a small but statistically significant reduction in the proportion of beneficiaries with frequent visits (one or more per month on average).

3. Medicare Risk Plans Increase the Likelihood of Receiving Care in a SNF, but Not the Number of Days

Medicare risk plans increased the likelihood of receiving care in a skilled nursing facility (SNF) by 0.3 percentage points (see Figure IV.3). This increase is statistically significant and large in percentage terms, but small in absolute magnitude, since by comparison only 0.8 percent of enrollees in the sample received care in a SNF over the past year. The estimate is consistent with the expectation that HMOs may reduce the length of stay in an acute care hospital by substituting SNF

‘The increase for HMO members in the likelihood of having at least one visit to a physician seems to conflict with the previously reported finding that HMO members are less inclined than nonenrollees to see a physician when not feeling well. The estimated impact on physician visits, however, **controls** for the difference on attitudes and other characteristics. Thus, the appropriate interpretation is that among beneficiaries with a given set of characteristics, including attitudes, those who belong to HMOs are more likely than nonmembers to have had a visit. (The unadjusted difference in proportions is very small and not statistically significant.) Furthermore, the difference appears to be due largely to greater use of preventive care by enrollees (for example, physical examinations), which are free or very inexpensive for HMO members, but costly (uncovered) for most other beneficiaries.

FIGURE IV.2
USE OF PHYSICIAN SERVICES

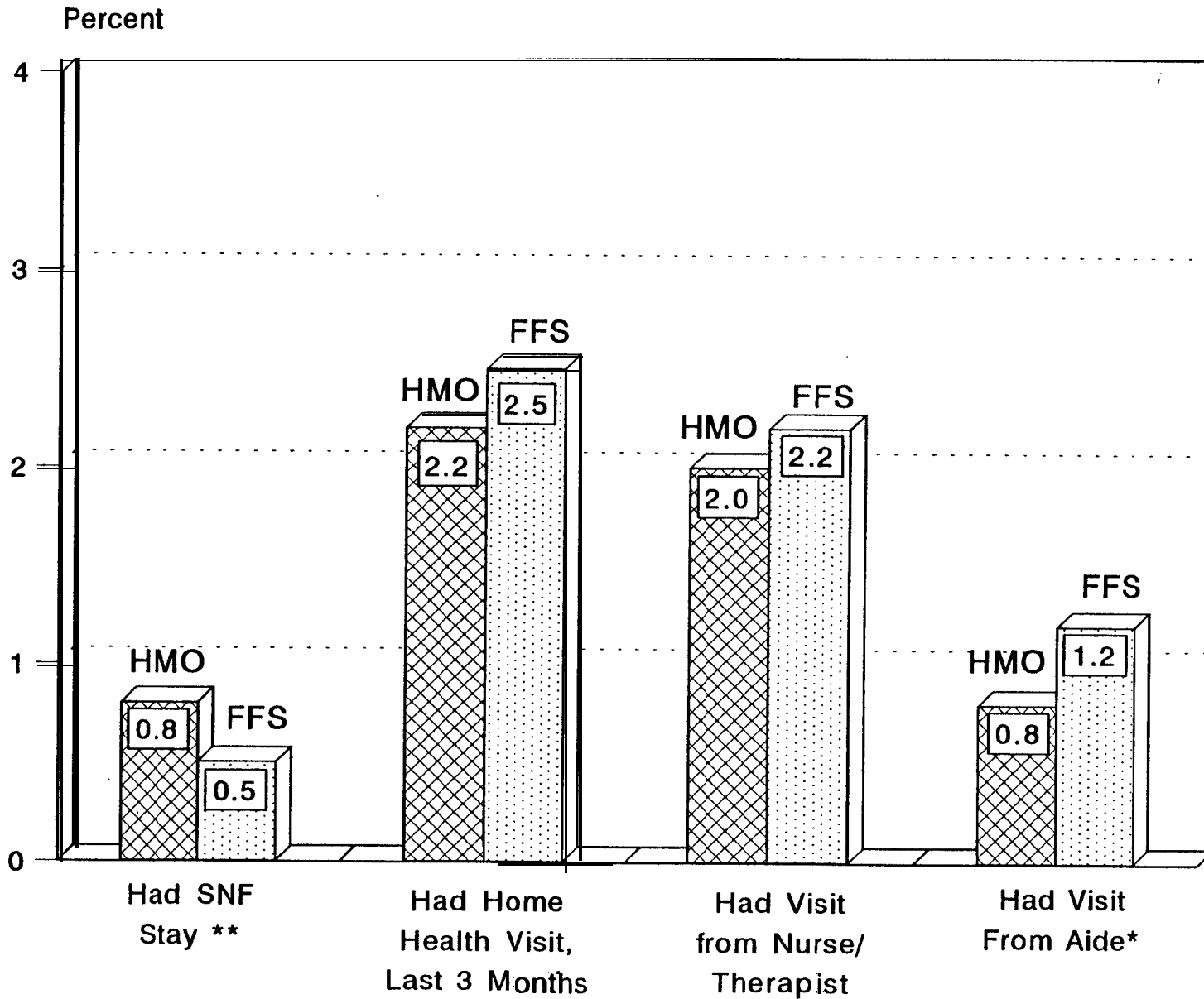


NOTE: FFS values are regression adjusted (enrollee mean minus regression adjusted estimate of impact)

** Statistically significant difference at the .05 level, two-tailed test.

*** Statistically significant difference at the .01 level, two-tailed test.

FIGURE IV.3
PERCENT RECEIVING SNF AND HOME HEALTH SERVICES



NOTE: FFS values are regression adjusted (enrollee mean minus regression adjusted estimate of impact)

* Statistically significant difference at the .10 level, two-tailed test.

** Statistically significant difference at the .05 level, two-tailed test.

care for inpatient care. However, HMOs deliver the same or fewer SNF *days* per beneficiary--the estimated effect is negative, but not statistically significant (see Figure IV.4). This result, as with the results for physician visits, suggests that HMOs increase the frequency of SNF use but reduce the intensity of use.

4. Enrollees Are Equally Likely to Receive Home Health Care as Comparable Nonenrollees, but Have Fewer Visits Overall

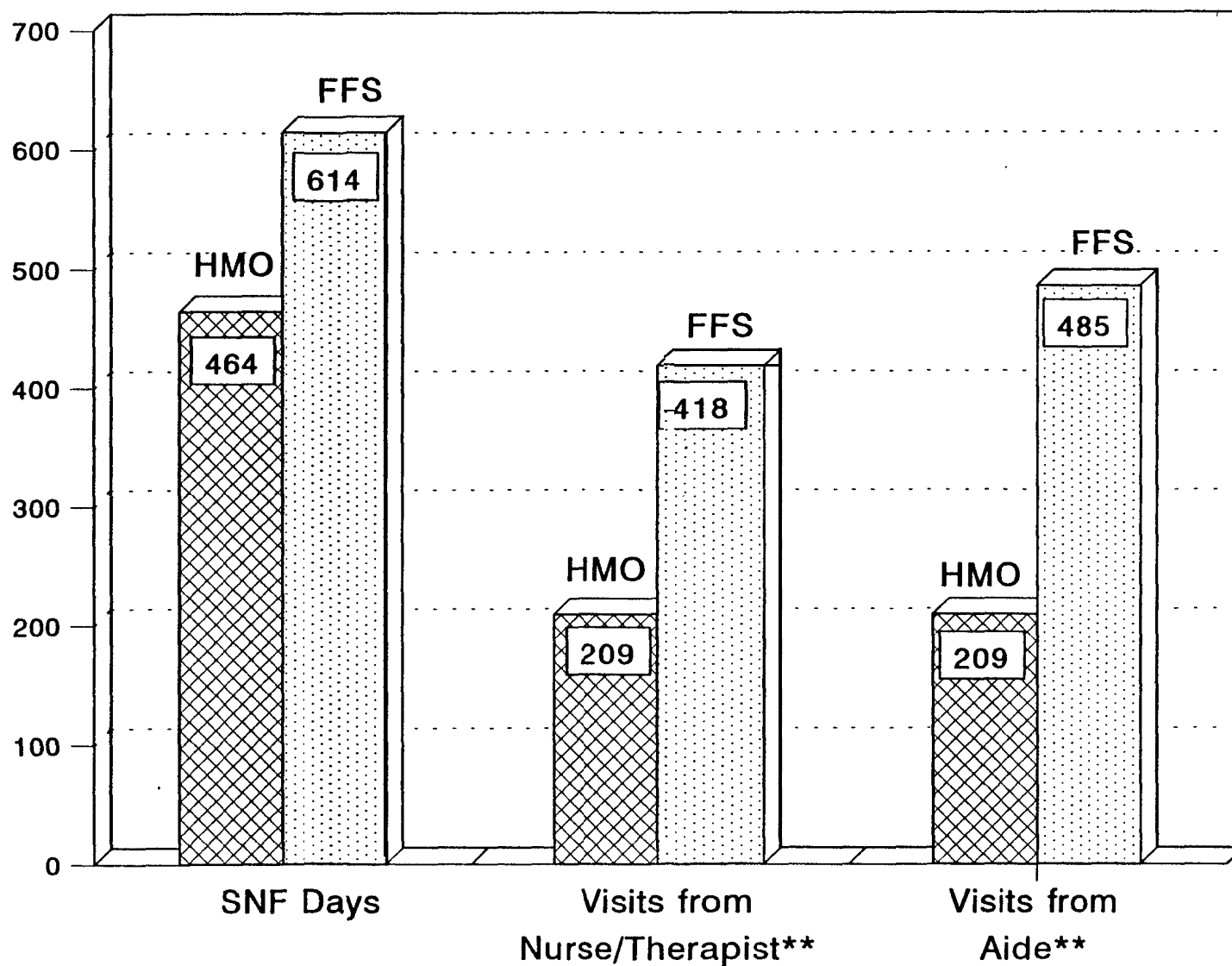
HMOs have no impact on the likelihood that HMO enrollees receive home care by a skilled nurse, therapist, or home health aide (see Figure IV.3). However, enrollees received 50 percent fewer home health visits from either nurses or aides than did comparable nonenrollees (see Figure IV.4). The results suggest that Medicare risk plans are not substituting home health care visits for acute care hospital days and have been able to restrict the number of visits. The larger reduction in visits per recipient may be due in part to HMOs' not matching the rapid increase in home health visits per episode that occurred in the FFS sector during 1989. Between 1987 and 1990, the number of home health visits per episode of care doubled in the FFS sector, due to a change in the interpretation of Medicare rules (see Chapter II). HMOs may not have Fully adapted to this change by 1989.

5. HMO Impacts Vary by Health Status

HMOs increased the use of some services among the beneficiaries whose health was the poorest, but reduced their use of other services (Table IV.1). For example, the estimated impact of HMOs on hospital admission was zero overall, but positive and significant for enrollees in poor health or with functional impairments. On the other hand, reductions in hospital days and home health visits were observed for all groups and were greatest for beneficiaries who were in poor health, had ADL impairments, or died within nine months after the interview.

The increased rates of hospital admissions and physician visits suggest that enrollees in poor health may have greater access to care than comparable nonenrollees, but the interpretation of the

FIGURE IV.4
SNF DAYS AND HOME HEALTH VISITS PER 1,000 BENEFICIARIES



NOTE: FFS values are regression adjusted (enrollee mean minus regression adjusted estimate of impact)

** Statistically significant difference at the .05 level, two-tailed test.

TABLE IV.1

HMO IMPACTS ON SERVICE USE, BY HEALTH STATUS AND MEDICAL CONDITIONS

Beneficiary Subgroup	Percent of Beneficiaries	HMO impacts, by Type of Service Use					
		Hospitalizations/ 1,000, Past Year	Hospital Days/ 1,000, Past Year	Physician Visits, Past Four Weeks	Estimated SNF Days/1,000, Past Year	Home Visits by a Nurse or Therapist/1,000, Past Three Months	Home Visits by Aide/1,000, Past Three Months
All Beneficiaries	100.0	6	-309 *	.026	-150	-209 **	-276 ***
Self-Rating of Health							
Poor health	5.7	131 • **	-818	.297 • *	-2,305 **	-1,269 ***	-2,335 • **
Other than poor health	94.3	-3	-271	-.006	-5	-134	-131
IADL Impairments							
One or more IADL impairments	29.3	11	-343 **	.027	-296	-293 ***	-412 • **
No IADL impairments	70.7	-15	-164	.021	214	46	128
ADL Impairments							
One or more ADL impairments	6.3	58 • **	-710 • **	-.117 **	-2,341 • **	-1,306 • **	-1,238 • **
No ADL impairments	92.7	-5	-223	.055	150	-31	-121
Serious Illness							
History of cancer, heart disease, or stroke	27.4	-6	-808 ***	.096	-380	-296 *	-934 • a*
No history of cancer, heart disease, or stroke	72.6	12	-95	-.004	-54	-172 *	2
Mortality							
Died within nine months after in interview	4.6	17	-2,237 • *	.560 ***	15	-2,341 ***	-2,495 ***
Did not die	95.4	6	-223	.003	-157	-121	-185 *
Mean of the Dependent Variable N		243 (6,457/6,071)	1,994 (6,457/6,071)	.641 (6,427/6,013)	653 (6,350/5,727)	408 (6,407/5,844)	475 (6,408/5,848)

greater reduction in hospital days and home health days among this group is more ambiguous. One interpretation is that **HMOs** are able to reduce use among those whose care needs are greatest without sacrificing the quality of care. Under this interpretation, **HMOs** are able to provide care more efficiently to beneficiaries who are high users of resources. A more negative interpretation is that enrollees with health problems are denied the level of care required to treat their condition appropriately. The third interpretation is that our measures of health may not be fine-grained enough to control for enrollee-nonenrollee differences in health status that influence use. That is, the subgroup of enrollees who reported poor health or functional impairments may be healthier or less impaired than the subgroup of nonenrollees who report the same problems. If so, the lower number of hospital days for enrollees in poor health relative to nonenrollees in poor health may reflect in part the somewhat better health among enrollees, which we cannot observe. Under this third scenario, the estimates would overstate the impacts of **HMOs**, since they would be due to favorable selection that is not controlled for by our measures of health status. Given the detailed set of control variables, this last explanation seems less likely than the others. Chapter V addresses whether **HMOs** are delivering more efficient care or restricting access to care.

6. **HMO Impacts on Service Use Vary According to HMO Model Type, AAPCC Rate, and Plan Premium**

In general, staff models are less effective at reducing utilization than are group or **IPA** models (Table IV.2). In contrast to the **sizeable** reductions achieved by group and **IPA** model plans, staff model plans were unable to reduce hospital days and home health visits. Furthermore, staff model plans increased physician visits substantially relative to the local FFS sector. Group model **HMOs** appeared to achieve somewhat greater reductions than **IPA** model **HMOs** for each of the services examined, although the differences between these two model types are modest for each of the services except SNF days. **IPA** model plans did not reduce SNF use, whereas both group and staff model plans showed **sizeable** reductions.

TABLE IV.2

HMO IMPACTS ON SERVICE USE, BY PLAN CHARACTERISTICS

Enrollee Subgroup, Defined by Plan Characteristics	Percent of Plans	Percent of Beneficiaries	Hospitalizations/1,000, Past Year	Hospital Days/1,000, Past Year	Physician Visits, Last Four Weeks	Estimated SNF Days/1,000, Past Year	HMO Impacts by Type of Service Use	
							Home Health Visits By Nurse, or Therapist/1,000, Past Three Months	Home Health Visits by Aide/1,000, Past Three Months
All Plans	100.0	100.0	6	-309 .	.026	-150	-209 **	-276 ***
Model Type								
IPA	53.3	37.6	10	-328 *	-.01	23	-306 ***	-219 .'
Staff	18.6	26.4	-2	-28	.15 **	-477	-55	-78
Group	28.1	36.0	-17	-465 . '	.07	-651 .	-280 . **	-292 . *
Medicare Enrollment (January 1989)								
1,000-5,000	38.6	7.8	12	-196	-.01	-187	-245 . *	-199 .
5,001-10,000	29.3	15.2	-8	-282	.10 . *	-15	-283 **	-204 *
10,001-20,000	17.5	17.0	-20	-668 **	-.05	-783 *	-275 .	-277 .
>20,000	14.7	60.0	8	-249	.09	-303	-180	-193
AAPCC Rate (1989)								
≤ \$275	37.3	23.2	-9	-192	.02	-187 . *	-469 ***	-326 **
\$275-\$325	46.7	43.9	13	-113	.06	-77	-184	-199
>\$335	19.1	32.9	-12	-1,022 . *	.06	-816	-30	-203
Monthly Premium (1989)								
Zero	20.0	37.7	5	-626 **	.004	-372	-395 **	-328 **
\$1-\$25	13.4	14.9	-11	-471	.04	187	-283	-228
\$26-\$50	42.7	32.8	4	-408 . *	.04	-318	-222 *	-208 .
>\$50	24.0	14.7	9	204	.09 *	-2%	-170	-119
Mean of Dependent Variable			243	1,990	.641	653	408	475
Sample Size (Enrollee/Nonenrollee)			(6,457/6,071)	(6,457/6,071)	(6,427/6,013)	(6,350/5,727)	(6,407/5,844)	(6,408/5,848)

Not surprisingly, plans in areas whose AAPCC rates are high achieved the greatest reductions in hospital days and SNF days. The high AAPCC rates suggest that hospital and nursing-home use by beneficiaries in the FFS sector may be more inefficient in these areas.

Finally, **HMOs** that charge the highest premiums are the least successful at reducing utilization. Plans that charge over \$50 per month increased the use of hospital days and physician visits, whereas plans in the other three premium categories reduced hospital days substantially. This pattern, together with the finding in the previous chapter that cost increases to HCFA were much lower for the **HMOs** that charged premiums of over \$50, suggest that **HMOs** which charge low premiums are those that experience more favorable selection and those that are most successful at reducing utilization relative to what it would be in the FFS sector.

7. **Medicare Risk Plans May Spend 10.5 Percent Less in Total for Medicare-Covered Medical Services Than FFS Medicare Would**

The reductions in service use that **HMOs** achieve have no effect on costs or savings to HCFA-- the net effect on HCFA costs from the risk program depends *only* upon whether the risk-adjusted AAPCC rates accurately reflect the cost that Medicare would have incurred in FFS reimbursements had the enrolled beneficiaries not joined an HMO. Any “savings” due to HMO reductions in service use relative to **FFS** use rates (or to more favorable prices for services) are realized only by the HMO and will go to (1) help **HMOs** cover the 5 percent reduction in payments that HCFA imposes by paying risk plans only 95 percent of the AAPCC; (2) cover costs that risk plans incur but **FFS** providers do not (e.g., administrative expenses for utilization review, recruiting and educating physicians, marketing costs, etc.); (3) HMO profits; and (4) reduced or zero premiums for additional benefits for enrollees. **Thus**, although reductions in utilization of medical services do not directly lead to savings to HCFA, the total value of these reductions provides an indication of whether the **HMOs** are likely to be able to prosper if favorable selection were eliminated (or the payment method fully captured it) and whether enrollees are likely to benefit from the risk plans’ efficiency.

Unless the value of these “savings” to **HMOs** due to reductions in resources are equal to about 15 percent of costs (5 percent to cover the fact that payments are 95 percent of FFS costs and about 10 percent on average to cover administrative costs), **HMOs** will find it difficult to profit on their Medicare plan unless they have favorable selection. The finding that **HMOs** reduce hospital days by **17** percent and home health visits by 54 percent suggests that **HMOs** may be able to break even or profit if selection were neutral or accounted for. However, **HMOs** do not reduce the use of physician services at all (our point estimate suggests that visits increase slightly, but the estimate is not significant). Thus, **HMOs** save nothing on physician services, which account for about 28 percent of the total costs that Medicare would have incurred for enrollees.

To obtain a composite measure of the reductions in resource use generated by **HMOs**, we multiplied estimates of the percentage impact on use by estimates of what Medicare would have paid in 1989 for enrollees, for each of the services examined, had the enrollees remained in the FFS sector. This approach assumes that the impact of **HMOs** on resource costs for each of these aggregates (inpatient hospital, SNF, home health, and physician visits) was equal to the percentage impact on utilization—that is, resources are valued at the implicit cost per gross unit of services in the FFS sector. We have no data on outpatient hospital visits, so HMO effects on this service were assumed to be zero (because outpatient services account for only 8.8 percent of projected total costs, this omission has little effect on our overall estimate).

Summing these dollar values across services and comparing to projected Medicare reimbursements, we estimate that **HMOs** spend about 10.5 percent less on medical services than HCFA would have spent in reimbursements for FFS care, and this difference is due almost entirely to the **HMOs**’ reduction in hospital days. Thus, while the Medicare program is estimated to lose 5.7 percent on risk contracting because payment rates are too high for the generally healthier enrollee population, the lower spending for medical resources by Medicare risk plans would be more than sufficient to offset the overpayment if these resource savings were shared with HCFA (as HCFA intended by setting reimbursement at 95 percent of the AAPCC). However, this rough estimate should be viewed with more caution than our impact estimates, because other factors not captured

HMO IMPACTS ON MEDICAL RESOURCES CONSUMED, VALUED AT MEDICARE PRICES

Cost Aggregates for:	Average 1989 FFS Reimbursements		HMO Impact on Service Use	Implied Impact on Costs, at Medicare Prices ^b
	Actual Nonenrollee	Predicted Enrollee ^a		
Inpatient Hospital Days	\$1,657 (58.9%) ^c	51,363 (58.1%) ^c	-16.8%	-\$229
Outpatient Hospital Visits	\$225 (8.0%)	\$206 (8.8%)	— ^d	— ^d
Visits to Physician's Office	\$719 (25.6%)	\$656 (28.0%)	4.6%	+\$30
SNF Days	\$125 (3.0%)	\$59 (2.5%)	-24.4%	-\$14
Home Health Visits	\$85 (4.4%)	\$59 (2.5%)	-53.6%	-\$35
Total	\$2,811 (100%)	32,344 (100%)		-6245 (-10.5%)

^aFor each cost aggregate, enrollee Medicare FFS reimbursements were predicted from regression models estimated for **nonenrollees**, with Medicare reimbursements as the dependent variable. The independent variables in the model are the same as those used to predict FFS costs in Chapter III.

^bThe implied impact is calculated as the product of predicted enrollee reimbursements and the HMO impact on service use. For example, for hospital days the impact is calculated as $-.168 \times \$1,363 = -\229 .

^cNumbers in parentheses are percentages of total actual or predicted Medicare reimbursements.

^dData on outpatient visits were not collected in the survey.

in our data may make the savings on medical resources either higher or lower than this estimate. For example, unnecessary services eliminated by the **HMOs** (for example, the last day of a hospital stay) may be less expensive than the essential ones. Alternatively, **HMOs** may reduce the intensity of services provided during a hospital stay, such as the number of days in intensive care units or the amount of physical therapy given, which could lower costs to the HMO by more than the estimated reduction in hospital days. Similarly, even though **HMOs** provide more physician visits, they may cut back on tests and the use of specialists, which could reduce medical costs. **HMOs** may also lower medical resource costs further by negotiating more favorable rates for particular services than are paid by Medicare.

D. THE UTILIZATION MANAGEMENT PRACTICES OF MEDICARE RISK PLANS

The methods that HMOs use to manage utilization effectively and achieve the types of impacts on service use described in Section C have changed over the past four years. Interviews conducted with Medicare risk plans in late 1988 for this evaluation indicated that HMOs relied heavily on primary care gatekeeping, preadmission screening for hospital stays, and financial incentives to control utilization (Nelson et al., 1990). An examination of data on hospital use rates and profitability indicated that the capitation of physicians and the cohesiveness of the physicians affiliated with the plan were the two most important factors associated with effective utilization control in 1988. Other studies (Hillman, Pauly, and Kerstein, 1989) also stress the importance of financial incentives. However, our more recent case study of 13 Medicare risk plans (Hurley and Bannick, 1992) suggests that the process by which successful plans attempt to manage utilization goes far beyond relying on financial incentives.

1. HMOs Exhibit a Few Key Similarities and Differences in Their Approaches to Utilization Management

While utilization management programs vary among plans, reflecting variation in the philosophies, organizational structures, and incentive systems of the HMOs, their general approaches to managing care exhibit important similarities:

- Plans believe that the key to effective utilization management lies in building cooperative relationships between the plan and the physicians and in emphasizing educational rather than control strategies.
- Plans focus the bulk of their UM resources on managing inpatient hospital use given both its high cost and the fact that the plans are unable to negotiate financial risk-sharing with hospitals.
- Plans are investing heavily in designing more comprehensive and detailed- utilization information systems.
- Plans are expanding their use of planwide performance targets, such as days per 1,000 members, to promote a goal-oriented and continuously upgraded environment for providers.

Despite these similarities, significant differences exist among plans (especially across the different types of HMO models) along several dimensions:

- The amount of risk sharing that is considered necessary to motivate physicians to be effective resource managers
- The commitment of HMOs to monitoring the performance of individual physicians
- The interest of HMOs in adopting practice protocols and guidelines and using them to prescribe provider behavior
- The degree to which UM is decentralized and UM functions are delegated to constituent groups and networks

Plan UM managers indicate that a clear link exists between the degree of financial risk borne by providers and the degree of control exercised by the HMO over their behavior. When a significant portion of the risk can be shared with providers, providers have greater autonomy and discretion over resource use. When plans bear most or all of the risk, UM managers develop techniques to promote the coordination of care and the provision of services in the least expensive but appropriate site.

2. **Current Utilization Management Techniques Are More Proactive and Collaborative**

Plans share a common commitment to promoting care management by primary care physicians, but the majority of those interviewed do so without invoking “strict gatekeeping”—that is, having each member associated with a specific physician who must provide or authorize all of that member’s care. Primary care physicians are strongly encouraged to be involved actively with patients throughout service delivery and to play the role of care coordinator. Plans promote close collaboration between UM personnel and primary care physicians to help physicians manage care more efficiently. Building this relationship permits UM staff to educate physicians and to engage them in the co-management of member services. This approach is considered to be especially effective for managing care for Medicare members who have multiple medical and social needs.

Inpatient utilization management in HMOs has become quite sophisticated, with plans committing themselves to managing “both ends of the hospital stay” aggressively. Plans are moving

away from relying primarily or solely on traditional *reactive* pre-admission certification, concurrent review, and retrospective review toward emphasizing the *proactive* comprehensive case management of hospitalized members. Discharge planning is also being incorporated into this case management function, as plans find that hospitals typically lack the incentives to develop posthospitalization planning expeditiously.

Plans that contain a large number of Medicare members are working to extend the continuum of care beyond the hospital stay. They are developing stronger ties with a limited number of nursing homes, home health providers, and social service providers and assigning specialized staff to monitor and manage this care. HMOs are also promoting greater awareness among physicians of the complexities of service needs for elderly members and encouraging them to be more cognizant of dealing with the “whole person.”

3. Case Management of Hospital Stays Has Become the Central Utilization Management Activity

The primary mechanism used by most HMOs to manage their risk is assigning case managers to each inpatient. Case managers are typically involved with members at admission to the hospital and work closely with physicians to initiate discharge planning immediately. They help arrange referrals and posthospital service needs, and maintain relationships with both members and their physicians after discharge. Plans assign case managers to specific hospitals and to specific physicians and physician groups in order to build the close relationships necessary for a successful case management system. In plans that put physicians at financial risk, the physicians look to case managers to help them be financially successful. In plans that do not put physicians at financial risk, both providers and administrators feel that the major benefit of case managers is their contribution to ensuring as “seamless” a delivery system as possible--that is, ensuring that beneficiaries can make the transition from one locus of care (for example, a hospital) to another (for example, a nursing home) with minimal disruption, waiting, or inconvenience.

4. **HMOs Continue To Refine and Extend Their Utilization Management Activities for Medicare Members**

Plans are developing specialized, targeted service programs for Medicare members, including early risk identification, self-care and health promotion, and geriatric assessment clinics. They also hope to use data from enhanced information systems to target efforts at providers who are not yet engaged fully in efficient care management. Plans also anticipate contracting with fewer nursing homes and other types of providers, to allow staff to build closer relationships and develop innovative care practices. Several of the plans are examining the feasibility of risk-sharing payment methods and selective contracting to align the incentives of specialists with those of primary care physicians in the plan. Building long-term partnerships with providers is considered to be essential to the success of the plans.

E. DISCUSSION

Medicare risk plans reduce the utilization of the most expensive Medicare-covered services, days of hospital care, and the use of home health care to levels substantially below those that would have been observed had these enrollees remained in the FFS sector. The plans obtain these reductions without increasing the average number of visits to physicians. The real value of the reductions in service use--based on the prices paid by Medicare--is equal to about 11 percent of the reimbursements that would have been paid for services to enrollees under FFS care. Further savings to the HMO are possible through negotiated price discounts. Thus, *the potential* exists for HMOs to prosper under the Medicare risk program while saving money for HCFA.

Surprisingly, the observed reductions do not arise in the way that HMOs are conventionally considered to control use--that is, they do not reduce the proportion of members who receive a particular service, but rather reduce the *quantity* of services rendered. This finding is especially striking for hospital care, given the previous findings in the literature, the utilization management procedures (gatekeeping and preadmission screening) that HMOs use specifically to prevent

unnecessary hospitalizations, and the incentives in the FFS sector under the prospective payment system that encourage all hospitals to shorten Medicare-covered hospital stays. The downward trend in average lengths of stay for Medicare has led several **HMOs** and analysts to conclude that there is now little opportunity for **HMOs** to save money by shortening hospital stays. Our results suggest that this is not the case.

Although different from the previous literature, our results are plausible and are supported by other findings in our evaluation and in other studies. The difference in unadjusted hospital admission rates for the two sectors is sizeable, but can be explained entirely by the better health status and lower care-seeking propensities of enrollees. Data on these factors were not available to earlier studies, including those of earlier Medicare risk plans that participated on a demonstration basis. The nature of our sample, which is not restricted to new enrollees, and the steady decline in admission rates for the FFS sector may also account for the different results obtained. The estimated reduction in average length of stay, 17 percent, is very similar to recent studies that compared lengths of stay in FFS and HMO settings for particular diagnoses, and to our own findings for hospital stays for both colon cancer surgery and strokes. Furthermore, the case study of managed-care practices indicated that **HMOs** now find it more effective to focus on case management of hospital stays, rather than concentrating on controlling admissions to the hospital.

The manner in which impact estimates vary according to the characteristics of plans also tends to be consistent with the literature. For example, the result that staff model plans have the smallest effect on hospital utilization is consistent with recent work by **Hillman**, Pauly, and Kerstein (1989) which showed that **HMOs** that put physicians at financial risk control hospital use more effectively than **HMOs** that expose physicians to little or no risk. The slightly greater effectiveness of group models relative to **IPAs** supports a similar finding from our earlier, less rigorous case study (Nelson et al., 1990)--that capitation combined with an organizational structure which facilitated interaction among physicians was likely to be the most successful at controlling service use.

The finding that **HMOs** have the greatest reductions in hospital use in areas where AAPCC rates are highest is especially encouraging from the perspective of the risk program. The linking of payment rates to local reimbursement patterns means that risk contracting is most attractive and lucrative to **HMOs** in areas where the **FFS** sector is least efficient. The greater reductions in hospital use in these areas, and the absence of an increase in physician services despite the more extensive coverage offered, indicate the potential for real savings through more efficient care.

One issue raised by the findings is whether the reductions in services used are due to more efficient care or to the denial of necessary services. The absence of an effect on the proportion of enrollees who receive hospital and home health care and the increase in the proportion who receive care from **SNFs** and physicians suggests that **HMOs** do not limit at least initial access to care and may in fact enhance it. However, that may be misleading, because **HMOs** may be providing **SNF** and home health care to patients who under **FFS** care would remain in the hospital longer and not need such care, but at the same time may not be providing such postacute care to other patients who would receive it in the **FFS** sector. Furthermore, the statistically significant reductions in the *amount* of hospital, home health, and physician services provided may create poorer health outcomes for enrollees. The finding that the probability of use is greater for those in the poorest health but also that the reductions in levels of use are greatest among this group also contributes to the ambiguity surrounding the interpretation of these reductions in use. Evidence on this issue is assessed in the next chapter.

Finally, one must recognize that the apparent financial benefits to **HMOs** from reducing service use (estimated to be at least 11 percent) will be offset to some degree by the resources required to achieve these efficiencies. As the case study illustrates, **HMOs** invest substantial resources in monitoring the performance of their providers, providing case management services, fostering a spirit of cooperation with providers, and educating them. These costs are not unique to Medicare members. However, because they do increase with enrollment, they are a component of the costs

of serving Medicare members. Furthermore, respondents in the case study indicated that the cost of managing the care of Medicare members is 2 to 4 times as great per member month as the corresponding costs per nonelderly member, because their service needs are greater and their health problems more complex. In addition to these UM costs, other costs are associated strictly with HCFA-mandated requirements for Medicare risk contracting, including peer review organization (PRO) reviews of the quality of care, enrollment and disenrollment procedures, reporting requirements, and marketing to Medicare beneficiaries. These costs are not incurred by FFS sector providers, but must be covered by the cost savings that HMOs are able to generate by providing care more efficiently than the FFS sector.

V. HOW DOES THE QUALITY OF CARE PROVIDED BY **HMOs** COMPARE WITH QUALITY IN THE FEE-FOR-SERVICE SECTOR?

In responding to the financial incentives to provide care more efficiently, **HMOs** may overly restrict the provision of services, creating poorer quality care. Efforts to economize could also lead to poorer care if the physicians, other service providers, or facilities used by **HMOs** are inferior to those in the fee-for-service sector. On the other hand, the features that distinguish **HMOs** from fee-for-service (**FFS**)--coordinated care, the emphasis on preventive care, more extensive benefits, and lower out-of-pocket costs to members--could lead to higher-quality care for enrollees. Our results indicate that, for the most part, Medicare **HMOs** appear to deliver care that is neither better nor worse than that rendered in **FFS**, either for hospital or ambulatory care. However, a few of the reductions in services under **HMOs** may affect quality. Although enrollees are much more satisfied than nonenrollees with their out-of-pocket costs, they are less satisfied with some aspects of the care provided, including its perceived quality. However, this difference pertains only to the degree of satisfaction--over 90 percent of enrollees rank their care as good or excellent along every dimension.

A. THE POTENTIAL EFFECTS OF **HMOs** ON THE QUALITY OF CARE

Financial incentives could induce **HMOs** to provide care that is less adequate than **FFS** care, but previous studies of **HMOs** provide very little evidence that they do so, and several suggest that **HMOs** deliver better care. This evaluation estimated the impacts of **HMOs** on the quality of inpatient care, access to ambulatory care, and beneficiaries' satisfaction with care.

1. **HMOs** May Provide Better or Worse Care Than the Fee-for-Service Sector

The financial incentive to provide health care as efficiently as possible may affect the quality of both inpatient and ambulatory care. For inpatient care, pressure to minimize the use of expensive hospital services may lead to inappropriate delays in admission, which may exacerbate chronic illnesses or reduce the chance for a satisfactory resolution of the patient's problem. Alternatively, stays could

be shortened inappropriately, inhibiting the patient's potential for recovery and increasing the likelihood of adverse consequences and readmissions. **HMOs** may also reduce the use of other hospital resources, such as expensive tests, medications, or rehabilitative services. Financial considerations may also induce **HMOs** to channel their patients to the hospitals that offer the best daily rate, even if the quality of the nursing staff or facilities is poorer than in other hospitals. The **HMO** may also select physicians and surgeons who command lower pay, but are less experienced or less skilled than those in the FFS sector. For ambulatory care, the quality of care may suffer if primary care physicians and specialists in the **HMO** are less skilled or if they reduce the number or content of office visits inappropriately. Primary care physicians in the **HMOs** may refer patients to specialists less often, may perform fewer follow-ups or testing, or may select less expensive but less effective modes of treatment.

The financial incentives of **HMOs** may also affect health care in other ways that affect beneficiaries even if the technical quality of the care is not affected. For example, **HMO** patients may be unable to obtain appointments for nonemergency care as quickly as FFS patients, they may be less likely to see their preferred physician or specialist for a given visit, and they may have shorter visits or less direct contact with a physician. **HMOs** may also place restrictions on when and where services may be received. While these differences do not necessarily lead to poorer health outcomes for the patient, they can be important aspects of the overall quality of care desired by the beneficiary.

Although the incentive structure could induce **HMOs** to make choices that lead to poorer-quality care, several factors suggest that **HMOs** may be likely to provide superior care than is delivered in the FFS sector. First, by coordinating care for each enrollee through his/her primary care physician (as many **HMOs** do), enrollees may receive a more appropriate mix of services and complementary treatment for their health problems. This case management approach has been advocated especially for the complex health care needs of older persons. **HMOs** may also take advantage of their size to implement newer techniques in geriatric care, such as geriatric assessment programs. Furthermore.

HMOs often provide coverage for health care services that are required by many elderly patients but are not routinely covered by Medicare. These special benefits are frequently offered by HMOs to attract beneficiaries, and could improve the quality of care for and the health outcomes of enrollees. The added benefits fall into five categories (Nelson, Langwell, Brown, et al., 1990): **preventive care** (for example, routine physical examinations and flu shots), **prescription drug coverage**, **vision exams** (and free eyeglasses in some HMOs), **hearing exams**, and **dental care**. The benefits that cover the testing for and treatment of vision and hearing problems are especially noteworthy because they can potentially mitigate declines in functioning. In addition, HMOs may be more likely than FFS settings to introduce more careful discharge planning activities that prevent expensive and untoward events, such as readmissions (Rubenstein and Kane, 1985; and Hurley and Bannick, 1992). These administrative efforts in HMOs may smooth the way for elderly enrollees whose multiple medical and social problems require more effective management.

The incentives of HMOs to provide care more efficiently may themselves lead to better outcomes among patients by reducing the incidence of the adverse consequences of some types of health care, especially hospital stays. That is, HMOs might prevent functional declines or deaths among enrollees by reducing the occurrence of iatrogenic events (that is, untoward outcomes from medical interventions, such as adverse drug reactions) that may occur during hospital stays (Steel, Gertman, Crescenzi, and Anderson, 1981).

2. Previous Studies Suggest That HMOs and FFS Differ Little Along Quality-of-Care Indicators

Although many studies, including the current evaluation, have shown that HMOs reduce the utilization of health care sources, there is little or no evidence that the quality of care for HMO and FFS patients differs noticeably. Many studies that compare the quality of care received by nonaged patients of HMO and FFS providers have been conducted, but most have been limited to specific HMOs and have not been representative. However, studies of the quality of care in the Medicare Competition Demonstration plans showed that HMOs appeared to deliver care to Medicare members

that was at least equivalent to the care provided by FFS providers. HMO enrollees received treatment similar to the treatment received by FFS patients along most dimensions for routine ambulatory care, colorectal cancer, congestive heart failure, hypertension, and diabetes mellitus. HMO members with colorectal cancer had somewhat longer delays in the diagnosis of complications and were less likely to receive expensive imaging scans than similar nonenrollees; too, enrollees with uncontrolled hypertension were less likely to have their medication prescriptions changed in response to changes in conditions. However, the many other measures of care did not differ significantly, and the observed differences did not lead to poorer outcomes among enrollees. Furthermore, HMO patients received better care than their FFS counterparts for a few of the measures examined, including more consistent routine and preventive care (Retchin and Brown, 1990a), earlier postdischarge follow-up visits among congestive heart failure patients (Retchin and Brown, 1991), and more thorough testing among colorectal cancer patients (Retchin and Brown, 1990b). Similarly, enrollee-nonenrollee differences in treatment measures for diabetes mellitus patients were mixed (Retchin and Preston, 1991): enrollees were more likely to be administered key tests and to have their medication changed when it was ineffective at controlling symptoms, but were less likely to receive influenza shots.

Previous studies of Medicare risk HMOs have also shown little or no difference in access to necessary medical care, satisfaction with care, and declines in functioning status among HMO enrollees and otherwise comparable nonenrolled beneficiaries. Enrollees were equally likely to experience declines in their ability to perform normal daily functions (Retchin et al., 1992), and were only slightly less likely to be satisfied with the quality of their care (Rossiter et al., 1988). Enrollees were more satisfied with their out-of-pocket costs and paperwork burden than nonenrollees, but somewhat less likely to be satisfied with the professional competence of their physicians.

3. Questions Addressed on the Effects of HMOs on the Quality of Care

A comparison of the quality of care delivered by HMOs and the traditional FFS Medicare system was based on estimates of the impacts of HMOs on (1) the quality of inpatient care delivered to patients with colon cancer or cerebrovascular accidents (CVAs, commonly referred to as strokes), (2) beneficiaries' access to care for three common chronic health problems (joint pain, chest pain, and urinary problems), and (3) beneficiaries' satisfaction with various dimensions of the care received. The evaluation addressed the following questions:

- Is the quality of inpatient care better or worse for HMO members than for- beneficiaries in the FFS sector? The specific hypotheses pertained to the effects of the HMO on the proportion of stroke and colon cancer patients who received various types of treatment normally recommended for patients with the given symptoms, and on the amount of services rendered.
- Do HMOs provide better or worse access to ambulatory care than FFS providers? For each of the three chronic health problems examined, the evaluation addressed whether certain treatments were received, the number of visits, and the outcomes of the treatments.
- Are HMO members as satisfied as beneficiaries in FFS with various aspects of care? The evaluation addressed the following aspects of beneficiaries' satisfaction with care: the process of care, the accessibility of care, the perceived quality of care, and out-of-pocket costs, as well as their overall satisfaction with care.
- Do the impacts of HMOs on satisfaction and access differ for different types of HMOs or patients?
- What proportion of enrollees disenroll from the HMOs?

B. DATA AND RESEARCH APPROACH

The research questions were addressed in three project reports--one examining the quality of inpatient care (Retchin, et al., 1992), one addressing satisfaction with and access to care (Gurnick, Retchin, Stegall, and Brown, 1992), and one describing disenrollment patterns (Langwell et al., 1989).

1. The Quality of Inpatient Care Was Assessed On the Basis of the Hospital Records of HMO and FFS Patients

Estimates of the effects of **HMOs** on the quality of inpatient care were derived from a comparison of the experience of random samples of HMO patients hospitalized for colon cancer surgery and for cerebrovascular accidents (**CVAs**, or strokes) with the experience of geographically matched random samples of Medicare beneficiaries treated for the same conditions on an **FFS** basis. For each condition, data were abstracted from hospital records for approximately 400 HMO patients and 400 FFS patients, all of whom were admitted during 1989 and satisfied certain eligibility requirements (age 65 or older, specific ICD-9-CM codes, at least a **24-hour** stay in the hospital, and other characteristics designed to yield a clinically homogeneous population). The HMO patients were drawn from 19 **HMOs** that had been selected at random from the set of all Medicare **HMOs** that contained at least 1,000 members (with a probability of selection proportional to the HMO's enrollment). The FFS patients were selected at random from a set of randomly selected hospitals serving the same 12 metropolitan areas as the **HMOs** in the sample. The **FFS** samples of patients were allocated across the metropolitan areas to match the geographic distribution of the selected patients from the 19 **HMOs**. Within areas, hospitals were selected so that the distribution of their Medicare patients with stroke or colon cancer by county of residence matched the county distribution of all enrollees in the selected **HMOs**. Thus, any differences in the treatments received by enrollees and nonenrollees were not due to geographic variation in practice patterns or to temporal changes. (See Appendix C for further information on the samples.)

Specially trained nurses abstracted the data from the records of 154 different hospitals. We adapted data collection instruments from earlier studies of the quality of care for these two conditions.¹ The colon cancer instrument was adapted from the study of quality of care conducted

¹The actual sample sizes were 402 enrollees and 408 nonenrollees for stroke patients, and 412 enrollees and 401 nonenrollees for colon cancer patients.

for the Medicare Competition Demonstrations; the stroke instrument was adapted from an instrument developed by the Rand Corporation.

Estimates of the effects of HMOs were measured for prehospitalization care, length of hospital stay, discretionary tests and procedures received, the incidence of complications, interventions and treatments received, and the outcomes of care. Impacts were estimated as the difference in the proportions of HMO and FFS patients who received each of several different procedures and the difference in the amounts and types of care rendered to each group. Various patient conditions were identified under which specific procedures, treatments, or tests are usually called for under common standards of medical practice, and the proportion of patients in the two sectors who received such care was compared. Only those differences that differ significantly from zero at the .05 level were assumed to be evidence of an HMO effect.

2. Satisfaction and Access Were Estimated on the Basis of Survey Data on Enrollees and Nonenrollees

Estimates of the impacts of HMOs on beneficiaries' satisfaction with care and on their access to ambulatory care were derived from a comparison of enrollees and nonenrollees, based on data obtained from the large survey of enrollees and nonenrollees described in the previous chapter (see Appendix B for a more in-depth description of the survey). Measures of satisfaction with care were derived from the ratings of respondents (excellent, good, fair, or poor) about various dimensions of care, including accessibility, the process of care, and the perceived quality of care. Access to care was measured by the type and amount of care received by each of the three groups of respondents: (1) those who at some point during the preceding year had experienced joint pain (about 38 percent of both groups), (2) those who had experienced repeated chest pain during activity (9 to 10 percent of both groups), and (3) those who had experienced urinary incontinence or bladder weakness (16 percent of both groups). Questions about care included whether the beneficiary had seen a physician,

the number of visits, whether he/she had seen a specialist, whether he/she received various diagnostic tests that are common for these symptoms, and the current status of the patient's condition.

Impacts were derived from regression or **logit** models that controlled for differences in some key characteristics that could have affected the care received by beneficiaries in **HMOs** and those in FFS settings and their satisfaction with that care. Specifically, the models controlled for the effects of personal characteristics, health and functional status, and attitudes toward health and health care. The estimated differences were subjected to statistical tests that ascertained whether they were larger than might be expected by chance. Again, only the regression-estimated differences that differed significantly from zero were considered to be evidence of an HMO effect.

3. Disenrollment Rates Were Calculated for Each Medicare Risk Plan

Finally, a study of disenrollment rates (Langwell et al., 1989) was conducted to determine the proportion of enrollees who left Medicare **HMOs** For some reason. Disenrollment rates were calculated from **HCFA's** Group Health Plans Operations file, which contains the dates of enrollment and disenrollment for all persons who ever joined a Medicare risk plan. Separate disenrollment rates were calculated for each HMO for the set of beneficiaries who enrolled in the plan at some point between 1985 and 1988. Individuals who died or were members of an HMO that discontinued risk contracting were not treated as disenrollees.

Disenrollment rates were defined and calculated according to the length of time since the date of enrollment. Rates indicate the proportion of enrollees who disenrolled within the first 3 months, the first 6 months, the first year, and the first 2 years after they joined the HMO. Data were also examined to determine the proportion of enrollees who switched to a different HMO. Disenrollment rates were averaged over plans with specific characteristics to support assessing whether some types of **HMOs** tended to lose more Medicare members than other **HMOs**.

C. THE EFFECTS OF HMOs ON THE QUALITY OF INPATIENT CARE

Overall, HMOs appeared to deliver hospital care to colon cancer and stroke patients that was equally effective in terms of outcomes (deaths and readmissions) and consistently less resource-intensive than the care provided by the FFS sector. HMOs tended to reduce the use of discretionary services and cut utilization most for those who were the least seriously ill. Enrollees with strokes had higher rates of neurological deficits at discharge than nonenrollees, but it is unclear whether these differences were due to the shorter lengths of stay or to the lower use of rehabilitative care among enrollees. Colon cancer patients were also discharged sooner and with more physical deficits by the HMOs than by FFS providers, and were more often discharged to home without posthospital services. There was also some indication that surgical treatment at the HMO was less competent. Nonetheless, the differences in care did not lead to higher mortality rates or readmission rates among HMO members for either stroke or colon cancer patients.

1. Prehospital Care Among HMO and FFS Patients Was Comparable

In general, the prehospital care of HMO enrollees and nonenrollees was similar. There was no detectable delay in hospitalizations among HMO members relative to nonmembers, and the prevalence of **neurologic** deficits at admission for CVAs was similar among the two groups. Measures of mental status were also similar. Only the presence of visual deficits and confusion differed among enrollees and nonenrollees, and both were more likely to occur among nonenrollees. Tumor staging and histologic differentiation of tumors for patients with colon cancer were similar. Procedures for diagnosing colon cancer were performed with equal frequency according to the inpatient record, and no significant delays between diagnosis and hospital admission were noted. However, a significantly higher proportion of enrollees showed **evidence of lymphatic involvement** of the tumor according to pathology reports, which could reflect delays in access to care or care-seeking by enrollees in HMOs.

2. HMO Patients Had Much Shorter Lengths of Stay

HMOs appeared to reduce lengths of stay substantially for patients with either condition relative to what they were likely to have been under FFS. Lengths of stay among enrollees were markedly shorter (by 18 percent for CVA and by 23 percent for colon cancer) than those of similar patients in FFS settings, consistent with the 17 percent shorter average length of stay in Medicare risk plans overall (see Chapter IV). HMO members with both conditions also spent less time in intensive care units. An important distinction suggests that the observed difference may be attributable to effective case management by the HMOs. For stroke patients, the HMO-ITS difference in days spent in intensive care was limited to the patients who had the most severe strokes, whereas for colon cancer patients we found no consistent relationship between the size of the HMO-FFS difference and the severity of the case (using five different measures of preoperative risk). Thus, for conditions for which intensive care may be discretionary (for example, strokes), HMOs were more likely than the FFS sector to conserve intensive resources for patients who had less severe illness, but to utilize these resources as frequently as did the FFS sector for those patients who had the greatest need for them.

Length-of-Stay Measure	Stroke Patients			Colon Cancer Patients		
	Enrollees	Nonenrollees	% Effect	Enrollees	Nonenrollees	% Effect
Days in Hospital	8.6	10.5	-18.3% **	10.9	14.2	-23.2% **
Days in ICU	1.2	1.8	-33.5% **	1.2	1.9	-36.8% **
Low severity	0.9	1.5	-42.7% **	--	--	Mixed
High severity	2.4	2.7	-11.1%	--	--	Mixed

**Significantly different from zero at the .05 level.

For colon cancer, for which post-operative intensive care is routinely provided after transfer from the recovery room, HMOs do not appear to use differences in the severity of preoperative risk as a basis for deciding whether to limit the use of intensive resources.

3. HMOs Substantially Reduce Discretionary Tests and Procedures

HMOs substantially reduced the utilization of laboratory tests and procedures, but most of these reductions pertain to the use of tests and procedures that appeared to be *discretionary*. For instance, approximately 28 percent of nonenrollees with CVAs had more than one CAT scan during their hospital admission (compared with 16 percent of enrollees), more than one-fourth had EEGs performed (compared with 18 percent of enrollees), and more than 40 percent had carotid doppler studies (compared with one-third of enrollees). Moreover, HMO-FFS differences in the use of echocardiograms varied inversely with CVA severity. Enrollees whose CVA severity was low were significantly less likely than FFS nonenrollees to receive echocardiograms, whereas the difference between enrollee and nonenrollee patients whose CVA severity was high was smaller and not significant.

HMOs also reduced rehabilitative care relative to the FFS sector, and while *these* reductions may raise more concerns about the quality of HMO care than does the reduction in laboratory tests and procedures, the implications are still somewhat ambiguous. For example, HMO stroke patients with motor deficits received less physical therapy than similarly impaired patients in the FFS sector, and HMO members were discharged more often with persisting deficits. While both of these differences could be attributable to the shorter hospital stays of HMO members, the HMO members with deficits at discharge did not have more outpatient physical therapy planned than their FFS counterparts. A similar pattern arose for speech therapy. Nonetheless, these differences may also be due to HMOs' reducing care that is likely to be ineffective. For example, the greater debility of stroke patients at discharge in HMOs may well disappear even without intervention as patients recuperate. Similarly, for colon cancer patients, for whom rehabilitative care is less likely to be necessary, HMOs ordered in-hospital physical therapy services and posthospital home health care less frequently than did FFS providers.

	Receipt of Therapy During and After Hospital Stay		
	Enrollees	Nonenrollees	HMO Effect
Stroke Patients with Speech Deficits at Admission			
Hospital days receiving speech therapy	1.8	1.9	-0.1
Percent with postdischarge plans for speech therapy (for those with deficits at discharge)	44.4 %	39.5 %	4.9 %
Stroke Patients with Motor Deficits at Admission			
Hospital days receiving physical therapy (PT)	4.1	5.2	-1.1 **
Percent with postdischarge plans for PT (for those with deficits at discharge)	55.0 %	52.9 %	2.1 %
Colon Cancer Patients			
Percent receiving PT in hospital	10.2 %	17.7 %	-7.5 %**
Percent of patients discharged to home for whom home health care was planned	24.9 %	32.5 %	-7.6 % • *

• Significantly different from zero at the .10 level.

** Significantly different from zero at the .05 level.

4. HMO and FFS Patients Received Similar Primary Interventions and Treatments, but HMOs Provided Lower Quality Surgery

Although the primary interventions received by enrollees and nonenrollees were quite similar, there was one difference for colon cancer patients that raised concern about the quality of the surgical care rendered. For stroke patients who have not had an intracerebral hemorrhage, the principal intervention is anticoagulation therapy. Enrollees and nonenrollees were equally likely to receive any such therapy, and equally likely to receive each of several specific anticoagulation medications. For colon cancer, the principal therapy is a surgical procedure, usually a colectomy. HMO and FFS patients were equally likely to receive the various types of colectomies (with one major exception), had similar average lengths of colon removed, lost similar amounts of blood during the surgical procedures, and had a similar average number of lymph nodes removed. However, the average distance between the tumor and the margin of resection (the portion of the colon that was removed) was significantly shorter for HMO patients, with the **average** distance being approximately equal to the minimum recommended (5.0 centimeters) by at least one surgeon specializing in these

procedures (Parker, unpublished). HMO and FFS patients were equally likely to receive chemotherapy following surgery.

5. Enrollees and Nonenrollees Experienced Similar Rates of Most Postadmission Complications, but HMO Responses Were Less Often Appropriate to Some Complications

Relatively few CVA patients experienced aspiration or congestive heart failure during the hospital admission, and the number who required mechanical ventilation at any time during the hospitalization was small for both groups. Overall, the incidence of pulmonary or cardiac complications from CVAs did not differ among enrollees and nonenrollees, nor did the incidence of urine cultures or timely chest X-rays for CVA patients with fevers.

Although HMO and FFS patients exhibited similar rates of complications and similar responses to complications on most measures examined, HMOs were less likely to take appropriate action in a few situations. For instance, enrollees and nonenrollees who were operated on for colon cancer were equally likely to experience postoperative fevers, but among these patients the HMO members were much less likely to receive chest X-rays for evaluating the etiology of the fever. (See Retchin, et al. 1992, for citations of studies which suggest that X-rays are recommended for 80 to 100 percent of such patients.) HMOs were also significantly less likely to take one precaution--administering preoperative antibiotics to colon surgery patients--to reduce the likelihood that patients would experience wound infection, a common form of complication following surgery. While such treatment is recommended by the American Society of Hospital Pharmacists for all surgical patients meeting our eligibility criteria, the observed HMO-FFS difference did not lead to a higher incidence of infections, as indicated by postoperative fevers, among HMO members in our sample. These two differences in utilization indicate potential lapses in the quality of the process of care in HMO settings, even though they did not lead to observable differences in outcomes in our sample.

Enrollees were less likely than nonenrollees to experience one measure of complications, postoperative confusion, but further analysis suggests that this observed difference was probably not

due to HMOs using medications more judiciously. FFS patients were significantly more likely to receive sedative-hypnotic drugs, and overmedication by FFS providers' is a potential explanation for the observed difference in post-operative confusion. However, the HMO-FFs difference in post-operative confusion among patients who had been administered a sedative-hypnotic was not significantly different from the HMO-FFS difference in percent with confusion among those patients who had not received these drugs. Thus, we are not able to attribute the lower incidence of post-operative confusion among HMO patients to the lower use of powerful sedatives by HMOs.

Postoperative Complication	Percent of Colon Cancer Patients		
	Enrollees	Nonenrollees	HMO Impact
Fever	24.4 %	27.4 %	-3.0 %
Confusion	14.5 %	24.1 %	-9.6 % **

**Significantly different from zero at the .05 level

6. HMO and FFS Patients Received Nursing Care of Similar Quality

Enrollees and nonenrollees received nursing care whose quality was similar. The frequency of recommended evaluations and the aspects of care especially relevant to nursing care, such as the use of physical restraints and the occurrence of decubitus ulcers (that is, pressure sores), were similar in the two settings. Thus, it appears that the quantity and quality of the nursing staffs of the hospitals used by HMOs are comparable to those of the hospitals serving FFS Medicare patients.

7. The Outcomes of Care in the Two Settings Did Not Differ

The limited set of outcome measures that were available for the evaluation, including mortality, readmissions, status at discharge, and postoperative complications, did not differ for enrollees and nonenrollees. Mortality rates were slightly lower among HMO members than among FFS patients for both colon cancer and stroke, but neither difference is statistically significant. Similarly, the proportion of HMO and FFS patients readmitted to the hospital within various time intervals did not differ for either colon cancer or stroke.

Outcomes	Stroke Patients			Colon Cancer Patients		
	Enrollees	Nonenrollees	Impact	Enrollees	Nonenrollees	Impact
Percent Readmitted (for those alive at discharge) within:						
31 days after discharge	9.3 %	12.4 %	-3.1 %	7.6 %	7.9 %	-0.3 %
61 days after-discharge	14.4	14.9	-0.5	11.6	12.2	-0.6
91 days after discharge	17.3	17.2	0.1	15.2	14.8	0.4
In-Hospital Deaths (%)	12.2	14.7	-2.5	3.4	4.8	-1.4

Among stroke patients, HMO and FFS patients had similar levels of impairments in daily activities at the time of discharge, but the HMO members were more likely to have several types of persisting neurologic deficits (for example, speech deficits, motor deficits, and sensory deficits) at discharge. Earlier discharges among HMO patients may have led to the differential resolution of the neurologic deficits at discharge, though HMO enrollees also had fewer inpatient physical therapy sessions. The proportion of CVA patients with new ambulation difficulties or new urinary incontinence at discharge did not differ in the two settings.

	Percent of Stroke Patients Exhibiting Symptoms at Discharge		
	Enrollees	Nonenrollees	HMO Impact
Symptoms at Admission (number with symptom)			
Visual deficits (276)	23.7 %	22.8 %	0.9 %
Speech deficits (540)	53.7	34.7	19.0 ***
Motor deficits in arms/legs (710)	58.6	49.5	9.1 *
Sensory deficits (238)	30.2	20.2	10.0 *
Obtundation/Stupor (181)	25.6	24.2	1.4
Confusion (218)	27.7	18.6	9.1 *
Functioning at Discharge			
Impaired in eating	39.7	39.3	0.4
Impaired in bathing	55.5	61.4	-5.9

*Significantly different from zero at the .10 level

**Significantly different from zero at the .05 level

8. HMO Patients Were Discharged to Lower-Cost Settings Than FFS Patients

Compared with FFS providers, HMOs discharged a lower proportion of both colon cancer and stroke patients to the most resource-intensive and expensive settings, despite the shorter hospital

stays for HMO members. For stroke patients, HMOs discharged a higher proportion to nursing homes and a lower proportion to rehabilitation hospitals, which are substantially more expensive and provide more extensive rehabilitative services than nursing homes (which may not offer any

Discharge Destination for Survivors	Stroke Patients*		Colon Cancer Patients*	
	Enrollees	Nonenrollees	Enrollees	Nonenrollees
Home	42.5 %	46.3 %	92.5 %	83.8 %
Nursing home	42.2	30.7	6.4	13.2
Retirement home	0.6	1.2	0.5	1.4
Rehabilitation hospital	14.7	21.8	0.5	1.6

*Distributions of enrollees and nonenrollees are significantly different from zero at the .05 level.

rehabilitation services). For colon cancer patients, enrollees were more likely to be discharged to home, and less likely to be transferred to nursing homes or rehabilitation hospitals.

D. ACCESS TO AMBULATORY CARE AND SATISFACTION WITH CARE

Over 90 percent of both enrollees and nonenrollees were satisfied with their providers, but enrollees received less extensive care for specific ambulatory conditions and were somewhat less satisfied than beneficiaries who received FFS care. On the other hand, enrollees were more satisfied with their out-of-pocket costs. Furthermore, despite the lower service intensity in HMOs, enrollees and nonenrollees who reported selected health problems within the past year were equally likely to be free of these problems at the time of the interview. These HMO-FFS differences in access and satisfaction are quite similar for the oldest beneficiaries (those over 80 years old) and younger beneficiaries, despite the greater health care needs of the very old. Impacts on satisfaction and access appear to be quite similar for different types of HMOs, although IPA enrollees were somewhat more satisfied with their care than were enrollees in group or staff model plans.

1. Enrollees and Nonenrollees Had Comparable Access to Required Care and Comparable Outcomes, but HMOs Delivered Fewer Services

We observed no consistent pattern of regression-adjusted differences between enrollees and nonenrollees in the likelihood of receiving medical attention for the three chronic conditions

examined. Among beneficiaries with joint pain, enrollees were more likely to have received treatment, but among beneficiaries with chest pains, enrollees were less likely to have received treatment. Although these differences were statistically significant, in both cases the differences in magnitude were modest, and the enrollee - nonenrollee difference in receipt of care for beneficiaries with the third problem examined--incontinence problems--was not significantly different from zero. Furthermore, although enrollees with chest pain were less likely than nonenrollees to receive treatment, examination of the reasons for not receiving medical attention revealed that this difference was due to the fact that fewer enrollees sought care (enrollees were more likely to say that they did not seek physician care because the problem was “not bad enough”). These contrasting differences across the three different conditions, the modest magnitude of the differences, and the explanation for the HMOs’ lower rate of treatment for chest pain patients suggest that access to medical attention for chronic problems is similar in HMOs and FFS.

For all three conditions, enrollees received a less resource-intensive response to their symptoms than did nonenrollees. For all three symptoms examined (joint pain, chest pain, and urinary incontinence), enrollees were significantly less likely to report seeing a specialist for care (see Table V.1), and significantly less likely to report having follow-up care recommended by their physicians. Enrollees were also less likely to have the progress of their symptoms monitored over time for each of the three conditions (although the difference for those with urinary problems was not statistically significant). Among beneficiaries with urinary incontinence, enrollees were also much less likely than nonenrollees to have had X-rays. However, for medications, the differences between HMO and FFS care were mixed--enrollees were significantly less likely than nonenrollees to have had medication prescribed for chest pain, but more likely to have had it prescribed for joint pain.

The less resource-intensive treatment provided by HMOs appears to be due to the provision of too many services by the FFS sector, rather than to skimping on care by HMOs. Despite the differences in diagnostic procedures, specialist referral, monitoring, and follow-up, the outcomes of

**PERCENT OF ENROLLEES RECEIVING TREATMENT, AND THE IMPACTS OF HMOs ON BENEFICIARIES
WITH CHRONIC CONDITIONS**

	Joint Pain		Urinary Incontinence		Chest Pain	
	Enrollees	HMO Impact	Enrollees	HMO Impact	Enrollees	HMO Impact
Visited Doctor	75.3%	3.3% **	75.2%	-0.3%	88.3%	-4.9% ***
Diagnostic Procedures						
Had X-ray performed	69.0	-0.4	39.1	-10.0 ***	17.3	0.8
Saw specialist	35.3	-10.8 ***	45.2	-10.0 ***	46.0	-9.7 ***
Had condition-specific tests ^a	—	—	92.4	-0.5	91.0	0.2
Therapeutic Intervention						
Prescribed medication	75.9	5.9 ***	67.0	0.0	86.2	-2.2
Prescribed condition-specific treatment ^b	24.4	2.1	21.7	0.4	55.9	-2.1
Follow-up						
Recommended Follow-Up	56.9	-6.2 ***	66.4	-8.4 ***	79.2	-8.5 ***
Progress Monitored	59.6	-3.8 **	55.7	-4.8	17.2	-6.3 **
Symptom Response						
No longer experiencing problem	22.7	0.6	46.6	-4.6	43.7	-1.4
Symptoms improved (for those still having problem)	29.3	-7.2 ***	35.6	-6.4	39.3	-5.2
Percent of Survey Sample with Condition During Past Year	37.9 %	-1.1 %	16.0 %	0.0 %	9.3 %	-0.8 %
Sample Size (enrollees, total)	2,243	4,252	946	1,710	556	1,080

NOTE: Impact estimates were obtained with logit models that predicted the probability of receiving the service as a function of enrollment status, demographic variables, economic variables, attitudinal variables, and health and functioning variables. The estimated model was then used to generate predicted probabilities for each individual as an enrollee and as a nonenrollee. The difference in the average of these two estimates across all sample members is the HMO impact.

^a"Condition-specific tests" were laboratory tests for beneficiaries with urinary problems, and EKGs for those with chest pain.

^b"Condition-specific treatments" were physical therapy for beneficiaries with joint pain, exercises for those with incontinence, and surgical or nonsurgical treatment for those with chest pain.

*Significantly different from zero at the .10 level, 'L-tailed test.

**Significantly different from zero at the .05 level, 2-tailed test.

***Significantly different from zero at the .01 level, 2-tailed test.

care for enrollees and nonenrollees were similar. For each condition, a similar proportion in the two groups reported that they were no longer experiencing the problem by the time of interview. The only significant difference in outcomes was that, among those who did continue to have joint pain, enrollees were substantially less likely than nonenrollees to report some improvement. For those continuing to report the other two symptoms (urinary incontinence and chest pain), the proportions of enrollees and nonenrollees reporting improvement did not differ significantly.

2. Few Enrollees Were Dissatisfied with Their Care, but Enrollees Were *Less Satisfied* Than Nonenrollees with Care and More Satisfied with Cost

Although statistically significant differences show that enrollees were less satisfied with their care along a variety of measures, the differences pertain to the degree of satisfaction, and do not indicate dissatisfaction among enrollees. Over 90 percent of both HMO and FFS beneficiaries rated their satisfaction with care as either excellent or good along many dimensions. However, 45 percent of enrollees rated their overall satisfaction with HMO care as excellent, compared with 52 percent of the nonenrollees. Along nearly every dimension examined, a significantly lower proportion of HMO members rated their care as excellent.

The one striking exception to the pattern of less satisfaction among enrollees is that they were much *more satisfied* than nonenrollees with the out-of-pocket costs incurred for their health care and coverage. About three-fifths of those who chose to remain in the FFS sector were somewhat dissatisfied with the amount they paid for medical care, compared with less than half of those who joined HMOs.

This pattern of results--a high degree of satisfaction among both enrollees and nonenrollees, but a lower proportion of enrollees who rated their satisfaction as excellent--was very similar for different aspects of care, including the process of care, structural aspects of care, and the outcomes of care (Table V.2). After differences in characteristics were controlled for, Medicare beneficiaries who are

TABLE V.2
PROPORTIONS RATING THEIR SATISFACTION AS EXCELLENT,
ADJUSTED FOR DIFFERENCES IN CHARACTERISTICS

Dependent Variable	Enrollees	Nonenrollees	Difference
Overall Quality of Care	45.2	52.9	-7.7***
Satisfaction with Personal Attention			
Explanations	42.6	53.9	-11.3***
Attention to patient	42.5	56.0	-13.5***
Preventive advice	39.2	50.1	-10.9***
Personal interest	40.4	55.9	-15.5***
Respect and privacy	47.4	59.1	-11.7***
Satisfaction with Access to Care			
Ease of seeing MD of choice	42.9	61.3	-18.4***
Availability of emergency care	48.8	57.8	-9.0***
Ease of making telephone appointments	39.2	56.6	-17.4***
Convenience of office location	49.3	50.4	-1.1
Convenience of office hours	40.7	48.3	-7.6***
Availability of specialty care	46.4	55.6	-9.2***
Availability of hospital care	51.0	56.2	-5.2***
Wait from appointment to visit	31.7	47.2	-15.5***
Wait at office	31.7	37.8	-6.1***
Ease of obtaining information by telephone	34.5	47.3	-12.8***
Ease of getting prescription filled	52.6	57.5	-4.9***
Satisfaction with Cost			
Amount of out-of-pocket costs	53.4	40.3	13.1***
Satisfaction with Quality of Care			
Perceived quality of office/facilities	49.8	55.0	-5.2***
Thoroughness of exams	42.7	52.1	-9.4***
Perceived accuracy of diagnosis	40.5	50.8	-10.3***
Thoroughness of treatment	39.9	49.7	-9.8***
Perceived results of care	40.5	48.9	-8.4***
Recommend plan/provider to others	93.5	96.1	-2.6***
Sample Size^a	5992	5158	

NOTE: Impact estimates were obtained with **logit** models that predicted the probability of receiving the service as a function of enrollment status, demographic variables, economic variables, attitudinal variables, and health and functioning variables. The estimated model was then used to generate predicted probabilities for each individual as an enrollee and as a nonenrollee. The difference in the average of these two estimates across all sample members is the **HMO** impact.

^a**Numbers** refer to the maximum sample size available for analysis by enrollment status. Due to item nonresponse, fewer observations are available for each comparison.

- * Significantly different from zero at the .10 level, two-tailed test.
- * Significantly different from zero at the .05 level, two-tailed test.
- ** Significant different from zero at the .01 level, two-tailed test.

enrolled in risk contract HMOs are 11 to 15 percentage points less likely than nonenrollees to give a rating of excellent to the following aspects of the *process of care* delivery:

- Explanations of the care received
- The-attention received as a patient
- Advice on preventing health problems
- Personal interest taken in their care, and
- Respect and privacy in regard to their care.

Statistically adjusted differences in the proportion who gave a rating of excellent to their satisfaction with the *structural aspects* that enhance access to care and its delivery range from 5 to 18 percentage points. Enrollees were likely to be somewhat less satisfied than nonenrollees on average with:

- The availability of different types of care (emergency, hospital, and specialty)
- The ease of obtaining care (making telephone appointments, receiving information by phone, getting prescriptions filled, and the convenience of office hours)
- Waiting times (from appointment to visit at the office), and
- The ease of seeing the physician of their choice.

Finally, HMO enrollees were 5 to 10 percentage points less likely to be highly satisfied with the **perceived quality and outcomes** of care. This dimension of care was measured by the proportions of enrollees and nonenrollees who gave a rating of excellent to:

- The quality of the office/facilities
- **The** thoroughness of examinations
- **The** accuracy of the diagnosis
- The thoroughness of treatment, and

- The overall results of care received.

3. **The Impacts of HMOs on Access and Satisfaction Are Similar for Older and Younger Beneficiaries**

Differences in access to care among the oldest enrollees and nonenrollees (those age 80 or older) are similar to the differences overall. For each condition, enrollees overall were less likely to see specialists, have follow-up recommended, or have their response to therapy monitored. The estimated HMO effects on having a follow-up visit recommended tended to be somewhat larger for the oldest beneficiaries, but the effects on seeing a specialist narrowed for the oldest beneficiaries. This mixed pattern and the modest size of the differences in the impacts for the oldest beneficiaries suggest that **HMOs** do not reduce services more aggressively among this group.

The effects of **HMOs** on satisfaction were also similar among the older and younger enrollees. Like younger enrollees, older enrollees were not dissatisfied with the care they received, but were significantly less satisfied with many dimensions than were nonenrollees of comparable age. Like their younger counterparts, older enrollees were significantly *more* satisfied than nonenrollees with their out-of-pocket costs.

4. **Access to Care and Satisfaction with Care Among Enrollees Are Similar in Group, Staff, and IPA Model HMOs**

Access to care among the HMO enrollees did not differ systematically across group, staff, and **IPA** model types; differences in satisfaction with care were modest. Enrollees' overall satisfaction with care, their satisfaction with the personal attention they received, and their perceived quality of care did not differ across model types. However, **IPA** enrollees were more satisfied with some aspects of their *access* to care (for example, the ease of seeing a physician of choice, the ease of making appointments, and the length of wait times) than were enrollees in other model types, and enrollees in group models were significantly less satisfied than others with this dimension. However, **IPA** enrollees were less satisfied with their out-of-pocket costs than were staff or group model enrollees.

5. Disenrollment Rates Are High and Are Associated with Dissatisfaction

Their lower level of satisfaction led a significant number of enrollees to disenroll relatively soon after joining an HMO. Overall, 7 percent of enrollees who joined a risk plan between April 1985 and July 1987 disenrolled within 3 months after enrolling. Twelve (12) percent had disenrolled by 6 months, 20 percent by one year, and 33 percent had left within 2 years after joining. Two-thirds of those who disenrolled returned to FFS care; the others switched to another Medicare HMO.

The characteristics of those who disenroll tend to be associated with higher-than-average health care needs. Disenrollees are older, more likely to be entitled due to disability, and more likely to be Medicaid-eligible.

Disenrollment rates varied widely across HMOs, reflecting in part the substantial variation in levels of satisfaction across HMOs. Twelve-month disenrollment rates ranged from 2.6 percent to 59.7 percent, with a median of 11.4 percent for the 109 plans examined; three-month rates ranged from less than 1 percent to 29 percent, with a median of 2.9 percent. Disenrollment rates were highest in larger plans (over 10,000 members) and for-profit plans. Disenrollment rates also tended to be substantially higher in plans in which a below-average percentage of enrollees reported being satisfied with their care. For 17 HMOs participating in the Medicare Competition Demonstrations, 12-month disenrollment rates during the 1985 to 1987 period were four times greater on average in the plans that contained a below-average proportion of first-year members who were satisfied with the professional competence of their care than in the plans with a higher-than-average proportion of satisfied members. Disenrollment rates were also inversely related to satisfaction with office wait times, and with convenience measures, although the latter relationships were considerably weaker. Not surprisingly, enrollees were relatively willing to tolerate some inconvenience associated with belonging to an HMO, but were much less willing to remain in the HMO if they believed that they were receiving inferior care.

E. DISCUSSION

HMOs provide less resource-intensive inpatient and ambulatory care, but most of the reductions in services appear to be due to a more judicious use of these services rather than to the withholding of beneficial care. The HMO reductions in a few recommended services *may* indicate a poorer quality of care for some inpatients (fewer chest X-rays for postoperative fever, less use of preoperative antibiotics), but they do not appear to have affected outcomes--the rates of readmission and rates of mortality among enrollees and nonenrollees are similar, and the two groups differ only along one measure of complications (with fewer enrollees than nonenrollees having postoperative confusion after colon cancer surgery). The shorter lengths of stay among both colon cancer and stroke HMO patients implies that HMO patients are less fully recovered on average at the time of discharge. However, it is unknown whether the higher incidence of speech and motor deficits at discharge among HMO stroke patients will persist. Similarly, HMO reductions in the use of specialists and follow-up visits for the ambulatory care of patients with joint pain, chest pain, or urinary problems do not appear to lead to poorer outcomes--for each condition, enrollees and nonenrollees were equally likely to report that they were no longer experiencing the symptoms.

The lower degree of satisfaction among HMO enrollees is consistent with the less resource-intensive but adequate (and perhaps more appropriate) care provided by HMOs. Over 90 percent of enrollees were satisfied with the care they received, but the proportion who rated their satisfaction as excellent is significantly lower than among nonenrollees along virtually every dimension examined (access, personal attention, quality, convenience, etc.). On the other hand, enrollees were considerably more satisfied with their out-of-pocket costs.

There are a few reasons for some concern about the quality of care provided in HMOs. Specifically, despite the greater deficits among enrollees at discharge, HMOs sent stroke patients to less resource-intensive (and less expensive) destinations than did FFS providers, and did not plan postdischarge therapy more frequently than FFS providers. Without longer follow-up, however, we

are unable to discern whether the less intensive treatment provided to **HMO** stroke patients on average will generate a permanent difference in deficits or longer recovery times. Furthermore, these observed differences in discharge patterns and post-hospital care could possibly be due to **enrollee**-nonenrollee-differences in age, availability of a family member to take care of the patient at home, attitudes toward health care, or other factors. Another difference of some concern is that enrollees who continue to have joint pain are less likely than similar nonenrollees to report that their condition had improved at least somewhat. Moreover, **HMOs'** lower use of at least one preventive measure, preoperative administration **of antibiotics** for colon surgery patients, suggests that some HMO patients may be at greater *risk* of adverse consequences than FFS patients, even if such differences were not observed in our samples.

Despite these concerns, however, enrollees in the **HMOs appear** to believe that somewhat less convenience and less intensive treatment are acceptable tradeoffs for the better benefits and substantially lower out-of-pocket costs they incur. Over 93 percent of enrollees would recommend their HMO to a friend. This vote of confidence from HMO members, combined with similar rates of adverse outcomes among the HMO and FFS sectors for both inpatient and ambulatory care, suggests that **HMOs** are providing care of roughly comparable quality to that delivered by the FFS sector, while using fewer and less expensive resources.

VI. HOW DOES RISK **CONTRACTING** AFFECT THE FINANCIAL SUCCESS OF **HMOs**?

If the Medicare risk program is to be successful in the long run, it must not only save money for HCFA and ensure that adequate care is provided, but also be attractive financially to **HMOs**. Our results on resource use suggest that **HMOs** are successful at reducing utilization relative to the Medicare FFS sector, and our findings on biased selection and cost show that **HMOs** are paid more than what HCFA would have paid for enrollees under **FFS** coverage. However, these results do not mean that the premium revenue received from HCFA and beneficiaries is sufficient to cover the direct and indirect costs of **HMOs** to provide services to Medicare members under a risk contract. The high rate at which plans dropped out of the program from 1987 to 1989 prompted a series of studies of **HMOs**. Our results suggest that about half of the Medicare risk plans are profitable in any given year. Quantitative analyses and interviews with 20 plans suggest that the primary factors affecting financial success are the AAPCC rate and the ability of **HMOs** to hold hospital days below about 1,800 days per 1,000, which in turn depends on the existence of adequate financial incentives and the aggressive management of hospital stays.

A. THE EXPECTED EFFECTS OF THE RISK PROGRAM ON **HMOs**

HMOs were expected to be able to earn normal rates of return on their Medicare risk plans by eliminating unnecessary services to Medicare beneficiaries and providing care in the most cost-effective manner possible. The efficiency gains were expected easily to offset the 5 percent lower payments that **HMOs** would receive relative to the amount that FFS providers would have received for delivering Medicare-covered services to these enrollees. The ability of **HMOs** to at least cover their costs under the risk program is clearly critical to the **viability** of the program.

Although Medicare risk plans do reduce utilization significantly (Chapter IV) and are actually paid over 5 percent *more* (rather than the intended 5 percent *less*) than what HCFA would have paid for their care had they not been in a risk plan (see Chapter III)', much ambiguity surrounds whether

HMOs are prospering under the risk program. The number of active risk plans (those with enrollees) fell from a high of 134 in January 1987 to 83 in January 1991, a decline of 38 percent. Some other plans have repeatedly complained about the financial difficulties they have experienced with their Medicare risk plans. Conversely, some HMOs appear to be thriving.

1. Previous Evidence on the Success or Failure of Medicare Risk Plans Suggested Mixed Performance

The primary evidence that many Medicare risk plans have had financial difficulties is the high rate of risk contract nonrenewals over three successive years. The proportion of risk contracts that were not renewed jumped from only 6 percent in 1987 to 17 percent in 1988, and then increased again to 26 percent and 28 percent in 1989 and 1990. The high proportion of nonrenewing plans and the lack of new entrants created concerns that the program was not equitable to many HMOs and would thus fail to continue expanding as had been hoped.

It was also clear, however, that not all risk plans were having financial difficulties. GHAA (1991) reported that half of the Medicare risk plans responding to their survey broke even or made profits in 1989. Risk plans in Miami and Los Angeles (and a few other cities) continued not to charge a premium for the substantial extra benefits they offered, a clear indication of profitability.

The widely diverse financial experience of HMOs with their Medicare risk plans prompted two early studies to investigate the types of plans that were leaving the program and their reasons for doing so. The studies suggested that the factors that affected contract nonrenewal included several characteristics of HMOs, low AAPCC payment rates, local competitive pressure from Medigap insurers and other HMOs, and the relative scarcity of physicians. For instance, Tompkins and Porrell (1988) found that the likelihood of nonrenewal was significantly higher among IPAs, among risk plans that contained a high percentage of rural members, among those that contained a higher-than-average proportion of disabled members, among those located in areas that contained relatively few physicians and nursing-home beds, and among those that experienced large increases in expected costs (as

indicated by large changes in their adjusted community rates submitted to HCFA). Moreover, based on interviews with 15 plans that dropped out in 1988, Tompkins and Pomeranz (1988) found that the primary reason for exiting the risk program was the poor financial performance of the plans, which they blamed on low AAPCC payment rates, an inability to negotiate favorable prices from providers (consistent with the low concentration of providers in these areas), and inadequate utilization management procedures.

The findings from these studies suggest that **some** of the factors associated with the financial failure of Medicare risk plans are similar to those associated in the literature with the poor financial performance of **HMOs** in general, while other factors are specific to Medicare risk contracting. For example, consistent with the findings for Medicare risk plans, Peele (1988) and Kenkel (1988) found that, on average, **IPAs** performed worse overall than group and staff model **HMOs**. Similarly, the ability of **HMOs** to negotiate favorable arrangements with providers and the strength of HMO utilization management procedures affect the overall financial success of an HMO, as well as the success of its risk plan. On the other hand, the adequacy of AAPCC rates obviously has much more bearing on the performance of the Medicare risk plan of an HMO than on its overall financial performance. For other factors, the converse is true--the rates affect the financial performance of **HMOs** in general but are not associated with the success of Medicare risk plans in the studies to date. For example, whereas the studies of Medicare plans cited **earlier** drew no inferences about the importance of risk sharing, both Peele and Kenkel, plus a more recent study by **Hillman**, Pauly, and Kerstein (1989), found that failing to share risks with providers, especially through **capitation** arrangements, was more likely to lead to financial failure. Other HMO features associated in these studies with the weaker financial performance of **HMOs** in general but not previously found to influence the performance of Medicare plans included **nonprofit** status, small enrollments, and contracts with physicians whose patient load constitutes largely HMO members.

2. Key Questions for the Analyses

The previous findings and the circumstantial evidence on the profitability of Medicare risk plans led us to investigate the following issues:

- What proportion of HMOs break even or earn profits on their Medicare risk plans?
- What types of risk plans are most and least successful, and which types are most likely to drop out of the risk program?
- Why do some HMOs with successful commercial products lose money on their Medicare risk plans?
- What makes Medicare risk plans successful?

B. DATA AND RESEARCH APPROACH

To address these issues, project staff conducted separate studies of (1) the financial performance of Medicare risk plans, (2) the decision of HMOs to stop offering a Medicare risk plan, and (3) the factors that distinguish successful and unsuccessful plans. The financial performance study estimated the profits and losses of individual Medicare risk plans during the 1987 to 1989 period (Shin and Brown, 1993). The study of discontinuing plans examined the proportion of HMOs that declined to renew their annual risk contract at some point during the 1987 to 1991 period and identified the HMO characteristics associated with high rates of nonrenewal (McGee and Brown, 1992). Interviews with 34 nonrenewing plans in 1989 and 1990 were conducted and reported on in Brown, Bergeron, and Shin (1991). Finally, a case study of successful and unsuccessful plans based on interviews with HMO executives culled some reasons for the especially strong or weak financial performance of risk plans (Bergeron and Brown, 1992).

1. The Financial Performance of Risk Plans Was Estimated from Data and Projections Submitted to HCFA by HMOs

Determining how HMOs perform financially in their Medicare line of business is a challenging task because no reliable data on HMO revenues and costs are available for the Medicare portion of

the operations. However, financial data on the overall costs and revenues of HMOs (by payor) are available in the National Data Reporting Requirement (NDRR) forms submitted annually by federally qualified HMOs. Using these data and data from the Adjusted Community Rate (ACR) reports submitted by HMOs, Shin and Brown (1993) estimated the Medicare portion of costs and revenues and calculated the profit margin for the Medicare line of business for each plan. They then used estimates to examine the distribution of the Medicare profit margins and the relationship between the characteristics and profitability of HMOs.

The cost-allocation method is based on the simple relationship that the average total costs per member month (which can be computed directly from NDRR reports) is implicitly a weighted average of the (unobserved) average cost per member month for Medicare beneficiaries and the (unobserved) average cost per member month for all other members. The weights are simply the proportion of total member months accounted for by Medicare members and non-Medicare members, respectively. Shin and Brown estimated the average cost per Medicare member month for any plan from the average total cost per member month (from the NDRR report), the proportion of total member months attributable to Medicare beneficiaries (also from the NDRR), and the plan's estimates of the *relative* cost per member month of its Medicare and non-Medicare members, as reported in the ACR forms. This adjustment takes into account the considerably higher expenses for elderly or disabled Medicare enrollees than for others.

Separating Medicare and non-Medicare revenues required fewer assumptions than separating costs. The bulk of the HMOs' revenues from their Medicare plan are AAPCC payments collected from HCFA, which are reported separately from other revenues in the NDRR reports, and premium revenue from Medicare beneficiaries, which can easily be extracted from total premium revenues. The Medicare portion of premium revenues was calculated as the product of the monthly premium reported in the Office of Prepaid Health Care (OPHC) Monthly Status Reports and the number of Medicare member months. Revenue from copayments and miscellaneous revenue were allocated

between the Medicare and non-Medicare lines of business in the same proportion as revenues from premiums (which included HCFA payments).

2. The Relationship Between Nonrenewal and Plan Characteristics Was Examined

The McGee and Brown (1992) study of the types of risk plans that were most likely to discontinue participating in the risk program focused on the 117 plans that contained at least 1,000 enrollees at some point and made one or more renewal decisions during the 1987-1990 period. Nonrenewal rates were computed for each year and for the period overall, and for risk plans with various characteristics. A statistical model was estimated to determine the relationship between the probability of nonrenewal and such plan characteristics as organizational features (for example, model type and for-profit status), plan benefits and premiums, the number and type of enrollees in the plan, payment and financial indicators, and market area characteristics (competition from other risk plans, the supply of physicians, and hospital prices).

The data on risk plans for these analyses were obtained from HCFA's Office of Prepaid Health Care Operations and Oversight. Explanatory variables for the statistical model of nonrenewal were calculated as the average value for the years during which a renewal decision was made.

In a separate study for this evaluation, Brown, Bergeron, and Shin (1991) conducted interviews with 27 HMOs that did not renew their risk contracts for 1989 or 1990 to identify their reasons for leaving the program. The interviews also focused on the recommendations of plans for changes that could be made by HCFA to encourage more HMOs to join and remain in the program.

3. The Factors Distinguishing Successful and Unsuccessful Risk Plans Were Identified in Telephone Interviews with Executives From 20 HMOs

To determine why some otherwise successful HMOs face serious financial problems with their Medicare risk plans, Bergeron and Brown (1992) conducted focused telephone discussions with the executives of 20 Medicare risk plans. In order to delve somewhat deeper into the reasons for success or failure in the risk program, we limited the sample of plans to those that met certain minimum

criteria for financial success in the Medicare business--they must have been operating for at least three years (in order to cover start-up costs and gain experience) and must have contained at least 5,000 Medicare enrollees (to spread the risk and fixed costs adequately). Of the 95 plans with a risk contract as of April 1990, 40 met these criteria, and more than three-fourths of these 40 plans reported overall profits to HCFA for a recent year. For the interviews, we selected 28 plans whose geographic location, chain affiliation, and payment (AAPCC) rate varied. The interviews, conducted in February and March 1991, covered the following aspects of the **HMOs**:

- Financial experience with their Medicare and commercial (employer) plans
- Financial incentives for physicians
- Payment arrangements with hospitals and other providers
- Utilization controls and utilization experience
- Perceived reasons for financial problems with their Medicare plans
- Planned changes to address problems
- Suggestions for changes that HCFA should make to the risk program to make it more attractive

Relatively few plans reported losing money in the Medicare business. Of the 20 plans that responded, only 4 reported definitely losing money in the Medicare risk program during the past few years, while 3 other plans reported a mixed record of breaking even and losing money. The remaining 13 plans either were definitely making money or vacillated between breaking even and making a small profit. In addition, the 2 **HMOs** that contracted with **multiple IPAs** or physician groups or had both a staff model component and an **IPA** component reported separately the financial performance of the distinct components of their plans (2 components for one plan, and 3 for the other plan). Of the total 23 plans or components of plans, 6 lost money, 3 had a mixed record of breaking even and losing money, and 14 were either consistently making money or vacillating between breaking even and making money.

The selected plans satisfied our criteria for having successful commercial operations. All but one of the 7 HMOs that were losing money consistently or occasionally on their Medicare plan reported at least breaking even on their commercial plans.

C. THE EFFECTS OF THE RISK PROGRAM ON THE FINANCIAL SUCCESS OF HMOs

The independent studies of financial performance and risk contract nonrenewal produced quite consistent findings about the proportion of plans that were financially successful between 1987 and 1990. These studies and the case study of the reasons for the success or failure of a small number of risk plans also yield basically similar findings about the characteristics of HMOs and market areas that are most conducive to the financial success of risk plans.

1. About Half of The Medicare Risk Plans Were Financially Successful

Both the study of financial performance and the study of renewals found that, between 1987 and 1989 or 1990, about half of the established risk plans (those that contained at least 1,000 enrollees) were financially successful. As shown in Table VI.1, the mean and median estimated profit rates for the established plans during 1987 to 1989 were negative, although quite close to zero (a \$-3 to \$-4 profit per member month, or about -1 percent of costs). Forty-eight percent of plans had positive net revenues (profits) and 11 percent earned more than 10 percent on their costs. Plans with negative net revenues were split equally among those listing small amounts, moderate amounts, or large amounts. Performance was slightly stronger on average in 1988 and 1989 than in 1987 (not shown), but essentially similar.

The profit rates for HMOs on their Medicare plans were somewhat lower than those for their overall business, but the differences were fairly modest. Both the mean and median of the overall profit rates reported by the HMOs were less than one dollar per member month, or about -0.4 and 0.4 percent of costs. About 57 percent of the HMOs reported overall profits, compared with 48 percent that reported a profit on their Medicare plan. However, the more striking difference was

TABLE VI.1

PROFIT RATES FOR MEDICARE, NON-MEDICARE, AND OVERALL
1987- 1989

	Medicare	Non-Medicare	Overall
Profit per Member Month			
Mean	-\$4.49	-\$0.97	-\$0.51
Median	-\$2.87	\$0.14	\$0.36
Profits as a Percentage of Cost			
Mean	-1.1 %	-0.8 %	-0.4 %
Median	-1.1 %	0.2 %	0.4 %
Distribution of Plans by Profit Rate, As a Percentage of Cost			
Positive Net Revenue	47.6 %	51.0 %	56.6 %
Greater than 10%	11.2	7.7	4.2
5.1% to 10%	20.2	16.8	5.4
0 to 5%	16.1	26.5	44.0
Negative Net Revenue	52.4 %	49.0 %	43.4 %
-5% to 0	18.9	20.3	25.9
-10% to -5.1%	17.5	13.3	9.8
Less than -10%	16.1	15.4	7.7

SOURCE: Shin and Brown (1993).

NOTE: Numbers may not add exactly to totals due to rounding.

the lower volatility in reported profits and losses for **HMOs'** businesses overall: only 4 percent of **HMOs** earned more than 10 percent on their overall business, and only 8 percent lost more than 10 percent. The proportions of **HMOs** whose risk plans had such extreme profit rates were 2 to 3 times larger. This result is not surprising, however, given the smaller number of Medicare members and the greater difficulty of predicting their needs for service.

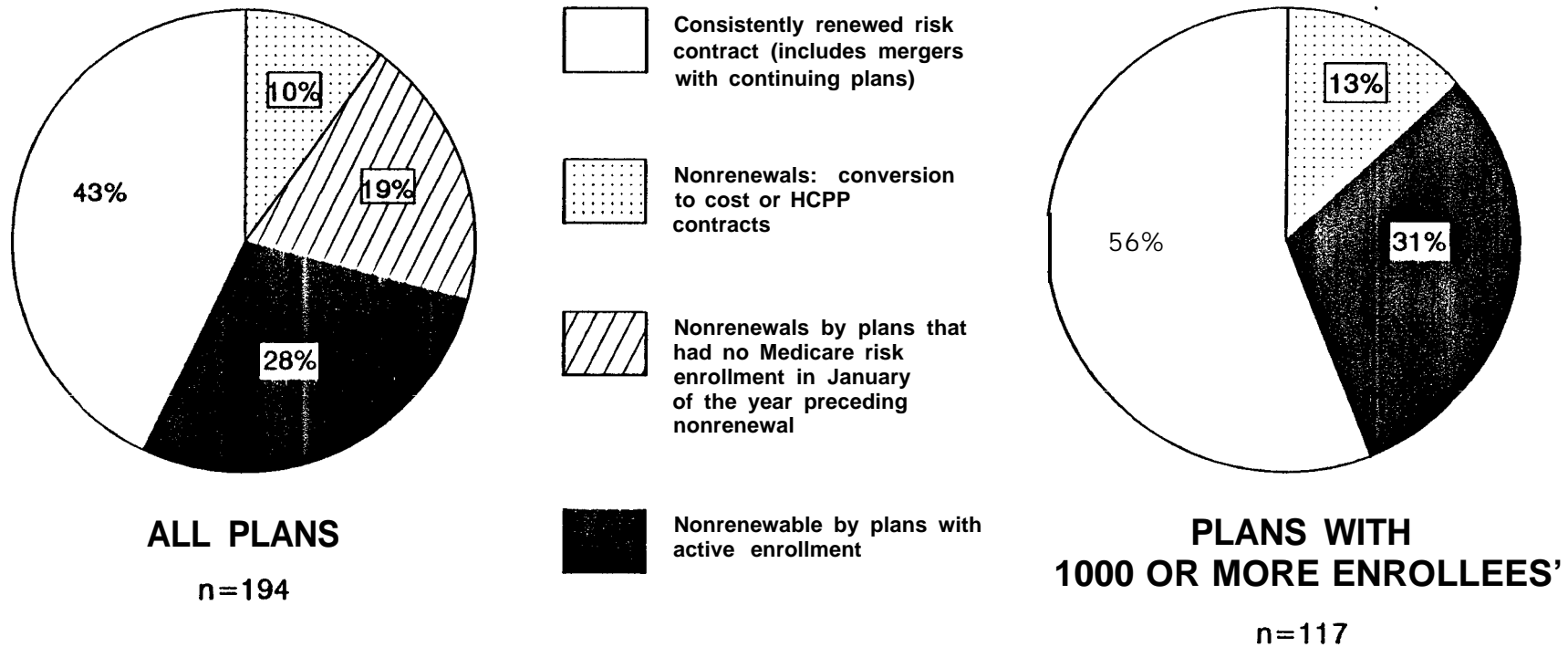
The fact that nearly half (44 percent) of the established plans operating between 1987 and 1990 declined to renew their risk contracts is further evidence that only about half were financially successful (see Figure VI.1). Of the 44 percent that declined to renew their contracts, 13 percent continued to provide coverage to Medicare beneficiaries under alternative arrangements (that is, under a cost contract or as a health care prepayment plan)¹ that placed them at little or no risk, but allowed them to make little or no profit. The other 31 percent discontinued service to Medicare beneficiaries entirely, or provided coverage only under a medigap policy. The nonrenewal rate for all risk plans (57 percent) was markedly higher than the rate for established plans. Of the 194 risk contracts held by **HMOs** that made one or more renewal decisions, 19 percent had no enrollment in January of the year during which they decided not to renew their contract for the forthcoming year. Another 10 percent converted to a less risky type of Medicare contract, and 28 percent provided coverage only under a medigap policy or discontinued service to Medicare beneficiaries.

Although a **sizeable** proportion of risk plans dropped their contracts each year between 1988 and 1991, the number of enrollees affected was much smaller, because nonrenewing plans tended to be smaller than the typical risk plan. Whereas between 72 and 86 percent of plans renewed their

¹Recall that under cost contracts **HMOs** are reimbursed for the costs of services they render to enrolled beneficiaries; under health care prepayment plans (**HCPPs**), **HMOs** are at risk only for physician services.

FIGURE VI.1

**RISK CONTRACT RENEWAL DECISIONS EFFECTIVE FOR 1988-1991 MADE
BY PLANS WITH RISK CONTRACTS DURING SOME OR ALL OF THE,
CONTRACT RENEWAL DECISION-MAKING YEARS FROM 1987-1990**



SOURCE: McGee and Brown (1992)

^aPlan size based on mean of January enrollments for all contract renewal decision-making years from 1987-1990.

contracts between 1958 and 1991, they contained between 91 and 96 percent of all enrollees see Figure VI.2). Thus, relatively few beneficiaries were required to change their coverage due to the financial failure of risk plans.²

2. The Financial Success or Failure of Risk Plans Varies According to Several Plan and Market Area Characteristics

Both the estimated profit rates and the nonrenewal rates of risk contracts varied widely according to the characteristics of plans and of the market areas in which they operated. The observed relationships between profitability and plan characteristics sometimes differed from the relationships observed between nonrenewal and plan characteristics, but most findings are consistent between these studies. The case study of 20 plans also found many of the same features to affect financial success.

a. Profitability Varies According to Previous Medicare Experience, For-Profit Status, Enrollment Composition, AAPCC Rates, and Hospital Use

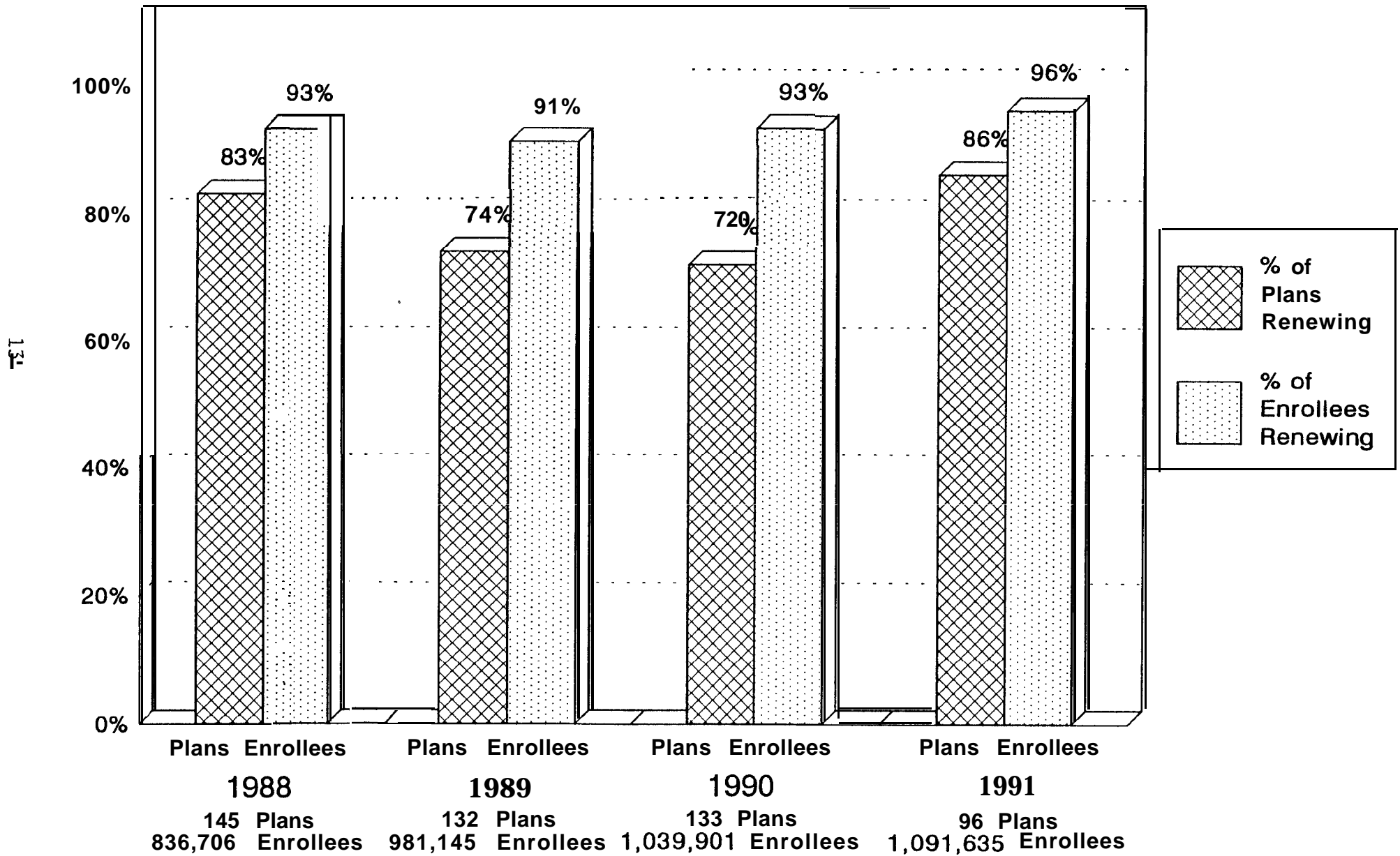
The profitability of Medicare risk plans was found to vary according to (1) the organizational and market area characteristics of the HMOs, (2) the benefits and premiums of the plans, (3) the enrollment mix of HMOs, and (4) a variety of readily available indicators of revenues and costs (see Table VI.2). The relationships between characteristics and profit rates were usually in the expected directions, but there were several instances in which the characteristics expected to be associated with profitability did not match expectations.

The organizational features of HMOs most strongly linked to profits were for-profit status and pre-TEFRA experience with Medicare beneficiaries as a demonstration plan. As expected, for-profit plans were much more likely to earn profits on their Medicare plan, and their average profit rates were markedly higher. Plans that had participated in the risk program's precursor, the Medicare Competition Demonstrations, were also more likely to make profits than plans that had previous

²HCFA requires terminating plans either to offer a medigap policy to their Medicare members or to make arrangements to ensure that beneficiaries have access to such coverage.

FIGURE VI.2

PERCENTAGE OF MEDICARE RISK PLANS THAT RENEWED THEIR CONTRACTS FOR 1988 TO 1991, AND PERCENTAGE OF ALL MEDICARE RISK CONTRACT BENEFICIARIES ENROLLED IN THESE RENEWING PLANS, BY YEAR



SOURCE: McGee and Brown (1992)

* Includes plans that merged with another risk contract plan (3 in 1988 and 4 in 1989)

TABLE VI.2

PROFITABILITY OF HMOs BY PLAN AND MARKET AREA CHARACTERISTICS

Measure	Percentage of HMOs Making Profits (1987-1989)	
	On Medicare	Overall
Organizational Characteristics	48%	57 %
Model Type		
Group	40	54
IPA	52	58
Staff	46	57
Tax Status		
For profit	58	58
Not-for-profit	40	55
Chain Affiliation		
Affiliated	43	56
Independent	50	59
Previous Medicare Experience		
Demonstration	54	56
Other (Cost/HCPP)	31	59
None	54	55
Medicare Plan Features		
Premium per Month		
Low (<\$30)	58	58
High (> \$30)	35	55
Drug Benefit		
Yes	63	55
No	38	59
Enrollment Measures		
Risk Enrollment		
1,000-5,000	48	52
5,001-20,000	50	57
>20,000	38	75
Medicare Enrollment As a Percent of Total		
Under 10%	37	55
10% or more	59	59

TABLE VI.2 (continued)

Measure	Percentage of HMOs Making Profits (1987-1989)	
	On Medicare	Overall
Biased Selection		
Very favorable	58	60
Slightly favorable/neutral	41	59
Financial Performance		
Renewed Contract for Subsequent Year		
No	50	29
Yes	47	60
Ratio of Area AAPCC to U.S. Average		
Less than 1.05	38	44
1.05-1.20	49	61
Over 1.20	52	60
APR-ACR		
Expected Medicare Deficit	41	57
Expected Medicare Surplus	51	57
Ratio of Medicare to Non-Medicare Cost per Member Month		
Low (<4)	53	63
High (>4)	43	57
Hospital Days per 1,000 Members		
Low (~1,600)	49	37
Moderate (1,600-2,100)	60	63
High (>2,100)	36	57
Market Characteristics		
Number of Competing Risk Plans		
None	47	60
1 or 2	47	49
3 or more	49	61

SOURCE: Adapted from Shin and Brown (1993).

experience under a cost contract or HCPP contract, but, surprisingly, were no more likely to be making profits than plans without previous Medicare experience. Plans that started in 1987 or later had higher profit rates than those that began in 1985 or 1986, but this result must be interpreted cautiously, since only 12 plans joined after 1986. Two other plan characteristics examined--model type and chain affiliation--displayed no apparent relationship with the estimated profit rate of plans. None of the organizational features was associated with HMOs' **overall** financial performance.

Risk plans that charged lower premiums and offered more benefits tended to be more likely to earn a profit. The substantially greater likelihood that plans which charged low premiums (less than \$30 per month) and those which offered prescription drug coverage earned a profit is due largely to the fact that such HMOs tended to be those whose AAPCC payments from HCFA were expected to exceed their expected cost of providing Medicare-covered services (plus a normal return). These plans are required to offset the projected surplus by reducing their premiums or by adding additional benefits (or by returning the money to HCFA). Thus, a low premium and extensive benefits are often simply indicators that the Medicare plan is profitable. However, the generous plan features themselves may also contribute to the financial success of the risk plan by attracting a large number of members, enabling plans to spread their **fixed** cost (and risks) over a larger base.

The relative importance of the Medicare plan to an HMO (the percentage of Medicare members) and the health of Medicare members were also strongly related to profits in the Medicare plan, although the absolute **number** of Medicare members is not. Conversely, **overall** profits **are** related to the absolute number of risk enrollees, but **not** to the other measures. HMOs whose Medicare members exceeded 10 percent of its total **membership** (implying that the Medicare plan accounted for over 30 percent of the HMO's costs and revenues on average) had much higher average profits and a greater likelihood of earning a profit on **their** risk plan than HMOs in which Medicare played a more modest role. Plans that experienced clearly favorable selection were also

much more likely than other plans to earn a profit, as expected, since the cost of medical services required by these members is less than the AAPCC payment on average. However, the absence of a relationship between profits and the number of Medicare members is surprising, since the general perception is that the larger plans are the most successful. The strong positive relationship between the number of risk enrollees and *overall* profit rates (75 percent of those with over 20,000 Medicare members made money overall) suggest that only financially sound HMOs enter the risk program aggressively.

Finally, several indicators of the costs or revenues of Medicare risk plans were highly related to their profits. Plans whose AAPCC rates were high, those that reported fewer than 2,100 hospital days per 1,000 Medicare members, those whose ratio of Medicare to non-Medicare hospital utilization rates was lowest, and those whose projected ratio of Medicare to non-Medicare costs per member month was below 4.0 were much more likely to earn profits on Medicare than plans without these traits. That is, both higher revenues and lower costs are associated with greater profitability, a result that is not surprising but not *tautological*, since higher revenues may be accompanied by even higher costs. Plans whose projected ratio of average AAPCC payments (APR) to average costs for Medicare-covered services (ACR) was below 1.0 were twice as likely as those whose projected ratio was greater than 1.0 to incur losses exceeding 5 percent of costs (not shown), although they were only slightly less likely to be earning a profit.

One counterintuitive finding is the absence of a relationship between an HMO's profitability on Medicare and whether it renewed its Medicare risk contract for the subsequent year. However, HMOs that did renew were twice as likely to be earning profits *overall* as were those that did not renew. This result is consistent with the views expressed by several HMOs in interviews (Bergeron and Brown, 1992) that they continue to operate even unprofitable Medicare plans, provided that the HMO does not lose money overall. Furthermore, an HMO's *decision* to discontinue its risk contract is typically based on the experience of several years, not simply the year prior to the decision.

b. Contract Renewal Was Related to Many of the Same Characteristics as was Profitability

Not surprisingly, many of the characteristics of risk plans associated with financial success also affected their likelihood of remaining in operation (see Table VI.3). For-profit plans, plans that contained a relatively high proportion of Medicare members (15 percent or more), those that experienced the most favorable selection, those located in areas whose AAPCC rates were high, and those charging the lowest premiums were more likely to **remain** in the risk program through 1991. Most of these relationships are quite strong; the probability of nonrenewal is only half as large among these plans than among the plans without these characteristics. Plans whose projected AAPCC payments substantially exceeded their expected average cost (by over \$20) were only about one-third as likely to leave the risk program as those that projected **sizeable** shortfalls, and half as likely as plans whose projected AAPCC payments varied modestly (in either direction) from their costs. Again, this pattern is consistent with the financial performance estimates for plans that projected surpluses in the ACR calculations. The importance of hospital use was also evident--nearly 80 percent of nonrenewing plans indicated that their hospital utilization rates were higher than anticipated.³

Despite these similarities, the relationship between characteristics and nonrenewal differed markedly in several cases from the relationship between the same characteristics and the financial performance estimates. For example, group and staff models were much more likely than IPAs to remain in the program, whereas no relationship was found between model type and estimated profit rates. Moreover, whereas renewal was strongly related to Medicare enrollment--plans that contained over 10,000 members were only one-fifth as likely to leave the risk program as plans that contained 1,000 to 5,000 members--financial performance was unrelated to size. (Plans with a high proportion of rural members were also much more likely to leave the risk program, but no such comparison was

³This information on expected hospital use was obtained from interviews with 34 plans that declined to renew their risk contract for 1989 or 1990. See Brown, Bergeron, and Shin (1991, p. 67).

TABLE VI.3

NONRENEWAL RATES BY PLAN AND MARKET AREA CHARACTERISTICS

	Number of Plans	Percent Nonrenewing
Organizational Characteristics	117	44%
Model Type		
Group	32	28
IPA	64	56
Staff	21	33
Tax Status		
For profit	42	38
Not-for-profit	75	48
Chain Affiliation		
Affiliated	80	49
Independent	37	35
Prior Medicare Experience		
Demonstration	33	36
Other (Cost/HCPP)	29	38
None	55	53
Medicare Plan Features		
Premium per Month		
Bottom quartile	29	17
25th-50th	29	66
50th-75th	30	50
Top Quartile	29	45
Drug Benefit		
Yes	60	45
No	57	44
Enrollment Measures		
Risk Enrollment		
1,000-5,000	66	61
5,001-10,000	26	35
Over 10,000	25	12
Medicare Enrollment as a Percent of Total		
5% or less	45	49
5.1-14.9%	45	51
15.0% or more	26	23

TABLE VT.3 (continued)

	Number of Plans	Percent Nonrenewing
Percent Rural Enrollment		
0	74	45
1-10%	24	17
Over 10%	19	79
Biased Selection		
Very favorable	29	21
Somewhat favorable	22	50
Slightly favorable/neutral	36	42
Financial Performance		
Aggregate Financial Performance		
Loss	47	51
Profit	51	24
Ratio of Area AAPCC to U.S. Average		
Less than 1.0	31	61
1.0-1.1	25	44
1.11-1.25	30	43
Over 1.25	31	29
APR-ACR		
Less than -\$20	26	62
-\$1 to -\$20	30	43
\$1 to \$20	29	38
Over \$20	24	21
Market Characteristics		
Number of Competing Plans		
None	35	63
1 or 2	47	40
3 or more	35	31
Primary Care Physicians per 1,000 Population		
Fewest (bottom quartile)	29	48
25th-50th percentile	31	48
51st-75th percentile	26	54
Most (top quartile)	31	29

SOURCE: Adapted from McGee and Brown (1992).

NOTE: The nonrenewal rate is the proportion of plans that had contained 1,000 or more members at some point during 1987 through 1990 but were no longer operating by 1991.

drawn for financial performance.) In addition, plans with previous experience either as a demonstration plan or as a cost or HCPP plan were more likely to renew, whereas the finding for financial performance suggested that plans without previous experience performed as well as those with previous demonstration experience and better than those with previous cost or HCPP experience.

Renewal was also linked to two market area characteristics--the number of competing Medicare risk plans in the market area and the number of physicians per capita. Plans in market areas that contained two or more Medicare risk plans were only half as likely to leave the program as plans without competitors. However, no such relationship was found for financial performance. Plans in areas that contained the most physicians per capita were only about half as likely to leave the risk program as plans in areas that contained fewer physicians. A greater supply of physicians presumably enables HMOs to negotiate more favorable arrangements with both primary care physicians and specialists.

Both the financial performance and nonrenewal studies suggest that nonrenewal is related to the *overall* financial performance of the HMO. Among plans that reported a profit overall (on average from 1987 through 1989), only 24 percent terminated their risk (contracts at some point; among plans that lost money overall, 51 percent did not renew their contracts. This pattern is similar to the pattern shown in Table VI.2 in which nonrenewing plans were only half as likely as renewing plans to report a profit overall. Interviews with nonrenewing plans demonstrated clearly that the persistent financial losses on the Medicare plan were the primary reason for nonrenewal- of every 4 nonrenewing plans cited poor financial performance as their reason for leaving the risk program. However, some plans will continue to operate a risk plan despite losses, provided their overall operations are profitable, in order to avoid the adverse publicity that could accompany withdrawal from the Medicare market.

c. Successful Plans in the Case Study Were For-Profit, Were Located in Areas Whose AAPCCs Were High, and Held Hospital Days Below 1,820 per 1,000 Members

A final piece of evidence on the types of plans that were most successful comes from the case study of plans that operated successful commercial plans and well-established, but not necessarily profitable, Medicare risk plans in **1990**. Although limited only to 20 judgmentally selected plans, the data on the financial performance of these plans may be somewhat more reliable because they were reported by the plans, rather than estimated by us. Furthermore, the study provided information on the opinions of plan executives about the factors that influenced the profitability of their plans.

Again, for-profit plans were the most successful. All 7 of the for-profit plans reported making money, whereas half of the 13 not-for-profit plans lost money:

	Number of Plans That:		
	Lost Money	Broke Even	Made Money
For-Profit Plans	0	0	7
Not-for-Profit Plans	7	1	5

The case study also reinforced the importance of biased selection, though plans tended to believe that they experienced much less favorable selection than other data suggest. Six plans perceived that they experienced adverse selection, and three believed that it was responsible in part for their poor financial performance. However, the plans had little or no evidence on which to base their perception, and estimates from the analysis of biased selection discussed in Chapter III indicated that none of these plans had experienced adverse selection. Nonetheless, our estimates of biased selection did indicate that all but one of the plans that reported being **clearly** profitable experienced selection that was more favorable than the average for all risk plans. Thus., very favorable selection contributes toward profitability, even if there is no evidence that adverse selection is responsible for losses.

Case study plans with the highest AAPCC rates also were more likely than other plans to report profits. Whereas none of the 9 plans whose 1990 AAPCC rate exceeded of \$350 per month lost

money, 7 of the 11 plans whose AAPCCs were less than \$350 reported losses. Again, this result is consistent with the higher renewal rate and higher estimated profit rate among plans in high AAPCC areas.

	Number of Plans That:		
	Lost Money	Broke Even	Made Money
1990 AAPCC Rate:			
Less than \$350	7	0	4
More than \$350	0	1	8

Finally, hospital use was another key difference between the successful and unsuccessful risk plans in the case study. The median number of hospital days per 1,000 Medicare members in 1989 was 1,506 among plans (or plan components)” that were profitable, compared with 1,906 among plan components that broke even, and 2,250 among those that reported losses. Only 1 plan component that was profitable reported more than 1,820 hospital days per 1,000 members, and only 1 plan component that lost money reported less than 1,820 hospital days per 1,000 members. While the relationship between hospital use and profitability is not surprising, the strength of the relationship emphasizes the critical importance of this measure. The value of 1,820 hospital days per 1,000 members is approximately 31 percent below the average for the fee-for-service sector in 1989 (2,635 days per 1,000 beneficiaries).

⁴Plan components are distinct IPAs or group practices within an HMO. Eighteen of the plans in the study reported data for a single entity, one plan provided data for two components, and one plan reported on three components separately.

3. Plans Cite Various Reasons for the Discrepancy Between the Profitability of Commercial and Medicare Plans

The 7 interviewed HMOs that earned profits on their commercial (employer) plans but lost money on their Medicare risk plans offered six reasons for their financial problems with Medicare that help explain the disparity between the two lines of businesses:

- AAPCC rates are too low and too variable across counties within the market area.
- Utilization rates for services that are used much more extensively by Medicare beneficiaries than by younger HMO members (SNF care, home health care, specialist care, and prescription drugs) are especially difficult to control.
- Medicare enrollees are sicker than most Medicare beneficiaries (adverse selection).
- Competition from medigap and from other Medicare risk plans forces them to charge premiums that are too low.
- Some state regulations that directly or indirectly affect Medicare plans inhibit their ability to prosper.
- Nursing-home beds are in short supply, limiting the ability of HMOs to transfer inpatients to SNFs.

Each of these factors cited by the HMOs is either unique to the Medicare program or the HMO's Medicare plan than to its commercial plans for **nonaged** members. While other evidence may contradict some of these explanations, HMOs believe that they are the source of their problems with risk contracting. Different HMOs cited a different combination of these reasons, but each reason was given by two or more HMOs. Nonrenewing plans interviewed by Brown, Bergeron, and Shin (1991) complained of many of these same factors, especially the AAPCC rates and adverse selection. The AAPCC payments received by HMOs for their Medicare members are determined in a very different manner than the premiums they receive for the commercial members; Whereas AAPCC payments are determined by the experience of beneficiaries in the FFS sector, premiums for groups of commercial members (employees of a firm) are determined by the HMO's actual past experience with the group. Thus, HMOs have little control over the **major** source of their Medicare plan

revenue, and these rates can change markedly from year to year even when risk plans expect their costs to be fairly stable. The problems with the AAPCC are exacerbated by the fact that the AAPCC rate for a county depends on trends in the FFS sector from 4 to 8 years prior to the year to which they apply (due, as explained in Chapter II, to 5-year averaging and the 3-year lag time before data are available). While these differences do not imply that AAPCC rates are too low, they do help explain why HMOs find it more difficult to maintain a consistent level of profitability on their risk plan. Furthermore, because Medicare does pay less For most services than do private payors, the rates negotiated by the HMO with physicians, hospitals, and other providers may be much less favorable for the risk plan than for the commercial plans.

Another Factor that may make the AAPCC rate seem low to HMOs relative to their costs is the effect that Medicare's prospective payment system (PPS) for hospital services has had on the rates. With the introduction of PPS in 1983, hospitals serving FFS patients have the same incentive as HMOs to shorten lengths of stay by Medicare beneficiaries, and the average lengths of hospital stays among Medicare beneficiaries in FFS have dropped substantially. These changes are reflected in a lower rate of increase in Part A AAPCC rates, and may make it difficult for HMOs to improve on the performance of the FFS sector. In serving nonaged individuals, hospitals Face no such incentives (in most states). Hence, HMOs may find it easier to outperform the FFS sector and prosper on their commercial contracts than on their Medicare risk contracts.

The perceptions of one or more HMOs that utilization rates for SNF, home health care, specialist care, and prescription drugs are "high" suggest that some HMOs were unprepared for the much greater need for these services among the aged. Because they lacked experience with these services, HMOs may not have developed effective methods For managing them.

The perceptions of HMOs that adverse selection caused their financial difficulties with their Medicare plan are not borne out by empirical evidence, but it may be the case that some HMOs experience less favorable selection for their Medicare members than they are accustomed to in their

commercial business. Many employers claim that the **employees** who select their firms' HMO option are younger and healthier than those who select indemnity plan coverage. Furthermore, although there is no evidence to support **HMOs'** perceptions of *adverse* selection, nonrenewing plans and unprofitable plans do experience significantly *less favorable* selection than more successful plans.

HMOs perceive not only that competition from medigap policies forces them to charge premiums for their risk plan that are too low to cover costs, but also that medigap insurers have an unfair advantage. Although the two products are direct competitors for beneficiaries who seek to purchase coverage for Medicare deductibles and coinsurance, the risk plans offer considerably broader coverage than most medigap policies, which may not be readily apparent to beneficiaries. These additional benefits include such essential features of **HMOs** as coverage for preventive care and routine examinations and the elimination of out-of-pocket costs for **physician** charges in excess of approved rates. Furthermore, if eliminating liability for deductibles and coinsurance encourages beneficiaries to use more Medicare-covered services than they would have if required to cover these costs out-of-pocket, **HMOs** bear all of the cost of these increases, whereas medigap insurers bear only 20 percent of the increased costs. AAPCC rates fail to fully cover the greater demand for services among beneficiaries who face no deductibles or coinsurance, because only about 70 percent of beneficiaries have coverage for these costs. Thus, some risk plans may be at a competitive disadvantage relative to medigap, even though the **HMOs** are able to compete effectively for **nonaged** members in the same location.

The perceptions of **HMOs** that state regulations inhibit their ability to prosper on Medicare risk plans stem from three types of complaints: (1) some states require that **HMOs** pay hospitals the Medicare (or state) DRG rates, rather than allowing them to negotiate a more favorable rate, (2) at least one state mandates the maximum price for medigap policies and (according to the HMO) sets this rate too low to enable **HMOs** to be competitive, and (3) one state requires that **HMOs** partially prepay contracted physicians (which the responding HMO felt was tantamount to discounted fee-for-

service). The constraints on payments to hospitals and physicians impinge on both the Medicare and the non-Medicare business of HMOs, but may be especially problematic for their Medicare plans if the profit margin that can be obtained by reducing utilization or experiencing favorable selection is lower for the Medicare plan.

Finally, some HMOs cite limited access to nursing-home beds as a reason for their difficulty with their Medicare plan. This constraint affects an HMO's Medicare plan much more than it does its commercial plans, because Medicare members use nursing homes much more heavily than do the nonaged. HMOs in areas whose supply of nursing-home beds is tight are less able to transfer patients from hospitals to nursing homes when they no longer require such extensive care, and are also less able to negotiate favorable rates from these institutions.

Two additional factors that help explain the difference in the financial performance of HMOs' commercial and Medicare risk plans, but were not cited by the interviewed plans, are the much smaller enrollment levels in the Medicare plans and the differences in marketing and enrollment practices. Medicare members comprise less than 10 percent of total membership in most HMOs, and the smaller enrollment prevents some Medicare plans from spreading their fixed administrative costs and their risk over enough Medicare members to be profitable (only three HMOs whose Medicare enrollment is over 10,000 have discontinued risk contracting). This problem is exacerbated by three problems that HMOs face with their Medicare plan--higher costs of attracting enrollees, higher disenrollment rates, and an inability to lock members in for a full year. HMOs must market their Medicare plan to individuals, whereas they compete in commercial markets by convincing employers to offer the HMOs as an option to all of their employees. While very few nonrenewing plans perceived that they had trouble attracting enough beneficiaries (Brown, Bergeron, and Shin, 1991), Medicare enrollees can disenroll or (in most plans) enroll during any month, unlike the one-year lock-in period and limited open-enrollment period in most indemnity plans. These "easy in, easy out"

features of risk plans make it more difficult for **HMOs** to determine staffing needs in a timely way and may also increase their costs of monitoring the eligibility and utilization of Medicare members.

D. DISCUSSION

The financial success of **HMOs** in the risk program varies widely, and the reasons for the success or failure of a particular risk plan differ greatly. From 1987 to 1990, about half of the risk plans that contained 1,000 or more Medicare members were successful enough to remain in the program. The reasons for the lack of success varied, but it is clear that (1) it is virtually essential that **HMOs** hold hospital use rates below some target level (about 1,800 days per 1,000 members in 1989), (2) enrollment must be large enough to enable **HMOs** to spread their **fixed** costs and financial risk adequately, and (3) risk plans whose **AAPCCs** are higher and which experience the most favorable selection are much more likely to be successful. Furthermore, even some of the **HMOs** that contain over 5,000 members and have prosperous commercial **products** have difficulty with their Medicare risk plans, due to differences in how **HMOs** must compete for members, how their premiums are determined, the types of services that must be managed, and the regulations to which they are subject. These difficulties have not only forced plans to leave the program, but (until 1992 at least) have also virtually ended the flow of new **HMOs** into the risk program.

Ensuring that **HMOs** are able to earn a normal rate of return, or at least be confident that they can cover their costs in most years, is likely to require action by both **HMOs** and HCFA. **HMOs** must be made more confident about the financial viability of a Medicare risk plan if the program is to grow, expand, and increase competition. However, these **goals** must be balanced against the goals of reducing costs to the Medicare program and eliminating excess utilization. Our estimates from Chapter III show that the program already costs HCFA more than would have been spent for reimbursements to FFS providers. Thus, simply raising payments to **HMOs** to make the program more attractive to them is not likely to be a viable option. Nor is it necessary, since many risk plans are prospering under the current program.

1. **Unsuccessful HMOs Must Strengthen Financial Incentives, Spread Costs Sufficiently, and Improve Utilization Management**

To be successful, risk plans must (1) impose sufficiently strong financial incentives on physicians to control inpatient use, (2) enroll a sufficient number of beneficiaries to cover the Fixed costs of risk contracting and limit their risk of losses from a few high-cost cases, and (3) continuously improve their utilization management practices. Among our case study respondents, seven of the nine risk plans or plan components that lost money did not expose physicians to significant risk for inpatient use. Conversely, risk plans that made money not only tended to transfer risk to physicians, but they also cited this risk-sharing more often than any other factor **when** asked to give the reasons for their financial success. The importance of adequate enrollment levels is illustrated by the data--almost all of the case study plans that experienced financial difficulties contained less than 10,000 Medicare members. Finally, the necessity of improving and adjusting the mechanisms for controlling utilization emerges as a key determinant of success from the case study on managed care (Hurley and Bannick, 1992), as reported in Chapter III. Successful plans have continued to modify their utilization management approaches, shifting from their emphasis on primary care “gate keepers,” who control patients’ access to services, to case management, which **emphasizes** advance planning and scheduling for the most cost-effective course of treatment. These successful risk plans have also shifted from trying to control the behavior of physicians to a more **cooperative** type of atmosphere in which the HMO helps the physicians manage their patients’ care by providing additional managerial and administrative services.

Most of the interviewed **HMOs** whose risk plans were unsuccessful but still operational wanted to retain their Medicare risk plan, despite losing money, and had definite plans for rectifying their perceived problems. The range of planned responses was vast, and tailored to each HMO’s environment, organizational structure, and perceived weaknesses. A few plans have converted to cost or HCPP plans, and some network or mixed models have dropped components of their plan (such as a particular group or **IPA**) for which utilization was **particularly** high. Two plans have hired

management consultants or developed a task force to make specific recommendations on how to improve their performance.

HMOs have planned several operational changes to lower their utilization rates, especially for hospital care. Included were plans to monitor the use of certain services more closely, introduce new monitoring mechanisms, and change the economic incentives facing physicians (for example, by eliminating physician reimbursement for a patient's emergency room use, converting from salary to capitation, changing the incentive structure frequently, or reducing utilization targets to increase the physician's share of risk). Other changes included actions to change the behavior of beneficiaries (by dropping or reducing drug benefits, substituting higher copayments for increases in premiums, orienting new members to managed care, and increasing health education) or the behavior of physician (providing protocols for treating specific diagnoses, and providing feedback on utilization patterns). Finally, a few changes were made to improve the prices faced by HMOs (that is, by acquiring one of the hospitals used by the HMO, adding a hospice, and renegotiating SNF rates).

HMOs are also taking actions to retain or increase their enrollment, reacting to competition with medigap policies, other Medicare risk plans, or Medicare cost plans or HCPPs in a variety of ways. Some of these actions may actually make them less profitable::

- Retaining a benefit (prescription drugs) that is **considered** to be a source of losses, directly or indirectly (by encouraging adverse selection)
- Waiving some portion of premium despite losses
- Moving away from capitation despite the need for greater cost-control incentives, due to the difficulty of competing for physicians
- Substituting higher copayments for premium increases

Thus, competition has significant effects on the behavior of Medicare risk plans and is a contributing factor to the financial difficulties of some plans. However, fair competition should not be viewed as

a negative factor, since one of its functions is to drive out inefficient providers or force them to become efficient.

2. **Changes in the AAPCC and State Regulations Would Benefit Risk Plans and the Risk Program**

While the bulk of the responsibility for financial performance lies with the HMOs, there are two factors over which HMOs have no control and which in some market areas may require intervention from HCFA or Congress to enable HMOs to succeed. The most critical factor is the AAPCC, which appears to be much more generous in some areas than in others, and displays wide variation across counties within market areas and over time that are inexplicable and unwarranted from the perspective of the HMOs. The second factor pertains to state regulations that hamper the ability of HMOs to compete and negotiate favorable rates.

Across-the-board increases in the AAPCC are clearly unwarranted and unnecessary, but improvements in the payment system are necessary. Under the current structure, operationally efficient HMOs in some areas may be forced out of the risk program, while HMOs in other areas receive AAPCC payments that are two to three times greater and exceed their costs by so much that they can provide enrollees, at no cost, additional benefits for which other insurers may charge \$100 or more per month. HMOs cite low AAPCC rates more often than any other factor for the financial losses of their risk plans, and HMOs that discontinue their risk contracts or claim financial losses tend to have strikingly lower AAPCC rates on average than successful continuing plans. The large annual fluctuations in some AAPCC rates, which are totally unrelated to the HMO's experience with the enrolled members, also make it more difficult For HMOs to manage the finances of their risk plan as successfully as they can their commercial products.

Eliminating state regulations that hamper the ability of HMOs to compete would help risk plans in a number of areas, but may be difficult to engineer. Regulations that set the price that HMOs must pay for hospital services and the rates that competing medigap insurers must charge Medicare

beneficiaries clearly reduce competition, influence the behavior, prices, and profitability of HMOs, and may ultimately increase costs.

Finally, HMOs that dropped their Medicare risk plan in 1989 or 1990 offered several other suggestions for how HCFA might facilitate risk contracting. These suggestions included providing more guidance and support to new risk plans, eliminating retrospective changes in required coverage, and developing some method of reinsurance or risk-sharing across plans. Several plans also cited dissatisfaction with the Peer Review Organization (PRO) process for assessing quality of care. A number of recent changes have since been implemented by HCFA to address some of these concerns (for example, under OBRA '90 HMOs are allowed to bill Medicare on a Fee-for-service basis for services provided in response to mandated mid-year coverage changes).

VII. HOW DOES MEDICARE RISK CONTRACTING INFLUENCE THE MEDICARE MARKET?

One of the goals of the Medicare risk program is to lower the cost of and increase access to health care services among all beneficiaries who reside in the market areas where HMOs are operating, regardless of whether beneficiaries choose to join an HMO. As HMOs increase their share of the Medicare-covered population, the added competition and its influence on practice patterns may slow the rate of growth in Medicare reimbursements for beneficiaries. Moreover, the beneficiaries who remain in the FFS sector may save money or have greater access to supplemental coverage if medigap premiums drop in response to competition from Medicare risk plans, which charge lower premiums and provide more extensive coverage than does medigap. Conversely, rising HMO penetration may lead to higher FFS costs for HCFA and for beneficiaries if FFS providers increase utilization rates or prices to maintain their income. Our studies suggest that medigap premiums do not respond strongly to the HMO penetration rate or to the premium charged by HMOs, but we do find that the rate of growth in FFS reimbursements declines as penetration rates rise. We believe that most or all of this estimated relationship is spurious, due to the lagged effects of reimbursements on AAPCC rates, and the effect of AAPCC rates on enrollment.

A. EXPECTED EFFECTS

One of the longer-term objectives of the risk program is to increase competition for the provision of services to Medicare beneficiaries, thereby influencing the behavior of fee-for-service (FFS) providers and insurers, even though they are not involved directly in the programs. The hope was that, as more Medicare beneficiaries in a given market area joined HMOs, (1) the costs to the Medicare program for those still receiving FFS care in this area would drop, and (2) Medicare beneficiaries who chose to remain in the FFS sector would have greater access to care because medigap premiums would decline.

1. The Growth of HMOs May Lower or Raise Costs to Medicare and to Beneficiaries

As HMO penetration increases, the cost to Medicare for beneficiaries receiving FFS care may decline. These cost reductions could occur if, in treating their FFS patients, physicians associated with IPA or group model HMOs begin to implement the same types of cost-effective practices that the HMO encourages them to use with HMO patients. As these HMOs acquire an increasingly larger proportion of the beneficiary population, the proportion of area physicians involved in the HMOs also increases, so that average FFS utilization rates and costs, and thus Medicare reimbursements, should be lower as a greater proportion of beneficiaries in FFS receive more cost-effective care.

On the other hand, the rise in penetration rates could increase average FFS reimbursements. When their patients switch to HMOs, FFS physicians face declining income and may increase fees or utilization rates to offset these losses. This type of response is very different from the usual expected response to increased competition, which is to force prices down and make production efficient. The reason that prices do not fall is that the users of the services, the beneficiaries, do not pay for the services because they are covered by Medicare; therefore, beneficiaries do not respond to price differences. Hence, physicians are not able to attract or retain patients by offering a lower price, nor will they lose many patients by raising prices (provided that they accept the Medicare-approved rate). Similarly, physicians or beneficiaries have no motivation to reduce utilization. While private insurers that provide coverage to the nonelderly exert some control over the service utilization of their subscribers (for example, through preadmission screening for hospital stays, second opinions, etc.), Medicare exerts no such control over the service utilization of Medicare beneficiaries. Medigap insurers, which provide coverage for Medicare deductibles and coinsurance, also have no control over the use of Medicare-covered services. Thus, given the lack of utilization controls, FFS physicians and other service providers may increase utilization rates or prices in order to maintain their incomes.

HMO penetration in a market area may also affect the behavior of medigap insurers, which in turn could increase or reduce costs to Medicare beneficiaries who remain in the FFS sector. HMOs typically charge lower premiums and offer a broader scope of benefits than medigap insurers as a way to attract new members. If HMOs market their services successfully, medigap insurers may be compelled to respond by lowering their premiums or enhancing benefits. On the other hand, since selection into Medicare risk plans (and out of medigap policies) is favorable, the remaining medigap policy holders will have higher average health care costs than the original risk pool. This change in the mix of clients may force medigap insurers to raise their premiums to cover the higher costs.

2. Previous Evidence on Competitive Effects Is Mixed

Two studies preceding the current evaluation provide very different conclusions about the effects of Medicare risk plans on costs in the FFS sector. Rossiter et al. (1988), examining the effects of Medicare HMO market penetration on FFS reimbursements, found little or no evidence of any relationship. However, Welch (1991) estimated that, for every 10 percentage point increase in Medicare risk plan penetration, **total** Medicare costs in an area decline by about 1.2 percent in the short run and by nearly 4 percent in the long run. Similarly conflicting evidence appears in the literature on the effects of HMOs overall (that is, not just their Medicare plans) on hospital costs per admission. Various studies in the mid-1980s found that HMO penetration had no effect on hospital costs per admission or per capita, but Robinson (1991) found that costs per admission in California rose at a moderately slower pace in markets in which HMO penetration was high than in markets in which the rate was low. However, Robinson attributes this effect to the fact the private insurers were able to negotiate with hospitals for favorable rates, in much the same way as do HMOs. Medigap insurers do not control the hospital choice of beneficiaries or negotiate prices, since Medicare covers the cost of the hospital stay fully (except for deductibles and very long stays) and dictates the price of hospital services through the prospective payment system.

3. **Hypotheses Pertain to the Effects of the Market Penetration of Medicare Risk Plans on FFS Costs and Medigap Premiums**

In light of the ambiguity about the competitive effects of Medicare risk plans on Medicare FFS costs, we have estimated this relationship using a different data set and a different model than those used by Welch. The basic research question is as follows:

- What effect does the proportion of Medicare beneficiaries enrolled in Medicare risk plans have on FFS reimbursements?

We also examined the effect of Medicare HMO market penetration on the amount paid by beneficiaries for medigap policies. No previous studies have addressed this relationship, but we hypothesized that strong competition from Medicare risk plans will force medigap insurers to keep premiums below levels that might have prevailed in the absence of competition from HMOs. Thus, we examine two issues:

- How does the proportion of Medicare beneficiaries who are enrolled in Medicare risk plans affect medigap premiums?
- How do Medicare risk plan premiums affect medigap premiums?

B. RESEARCH DESIGN AND DATA

We addressed these issues in two separate reports: Gurnick et al. (1992) and Gurnick, Gleason, and Brown (1992).

1. **Analysis of the Effects of Competition on FFS Reimbursements Was Based on Medicare Claims Data for Cohorts in 48 Market Areas**

To estimate the effects of risk plan penetration on FFS reimbursements per beneficiary, Gurnick, Gleason, and Brown (1992) used Medicare claims data on the FFS reimbursements of approximately 2,000 beneficiaries selected randomly in each of the 48 metropolitan areas that contained one or more Medicare risk plans with at least 1,000 enrollees in 1987 or 1988. The sample in each market area was allocated across counties to match the distribution of Medicare risk plan enrollment in that

area. The claims data collected on these individuals pertained to years 1984 through 1988, and they were used to construct average reimbursements per beneficiary for each county for each year. These data were then supplemented with data on the following:

- The proportion of Medicare beneficiaries who were enrolled in risk plans in each county each year, constructed from one of the files used by HCFA to prepare the AAPCC (the “stacked demographic file”)
- The characteristics of the beneficiaries (age distribution, percentage female, percentage disabled, percentage black and Hispanic, and percentage with any Medicare reimbursements in the previous year)
- Market area characteristics (hospital occupancy rates, physicians per 1,000 residents, the percentage of the population in urban areas, and per capita income)

Gurnick, Gleason, and Brown estimated a variety of regression models to determine the effect of penetration rates on **FFS** reimbursements, controlling for the characteristics of the beneficiaries and market areas. Counties were the unit of observation for the analysis, with separate observations for each of 4 years, 1985 through 1988. The models varied according to whether current or lagged values of penetration rates were used and whether the model controlled for constant area-specific factors that may have affected both the penetration rate and the average reimbursement level in a given county. This “fixed effects” model was preferred because areas whose FFS costs in preprogram years were high will also have high AAPCC rates in subsequent years and are likely to attract more beneficiaries, but are also likely to continue to have higher-than-average costs. The fixed-effects model controls for this effect by essentially converting observations for the four years on each variable for each county into differences from the county mean for that variable over the **4-year** period and then performing the regressions on the transformed variables. Thus, the model estimates the effects of changes in a county’s penetration rate relative to the average rate during the **4-year** period on the changes in FFS costs per beneficiary about the mean for the county over the same time period.

Most of the analysis was limited to the 107 counties which yielded data on at least 200 beneficiaries. Pooling the data for the 4 years yielded 427 observations (data for one year were not available for one county).

2. Analysis of the Effects of HMO Penetration on Medigap Premiums Relied on Survey Data

As part of our evaluation, Gurnick et al. (1992) analyzed the effects of HMO penetration on the behavior of medigap insurers based primarily on data from our survey of Medicare beneficiaries in the FFS sector. The original design for this study was to use data from state regulatory agencies; however, the quality of these data proved to be poor, and were of limited value. Hence, the premium paid by beneficiaries for their medigap coverage that was reported on the survey was used as the dependent variable in the analysis.

To determine the effects of market penetration on medigap premiums, the study regressed premiums on the market-area penetration rate for 1988, controlling for the characteristics of the beneficiaries and of the market area that might have an effect on either the premium charged to an individual or his or her ability to pay for insurance. Alternative models were estimated to assess how the average premium charged by local Medicare risk plans affected the medigap premium. The control variables used in the models included four sets of variables: the characteristics of beneficiaries (obtained from the survey), such as income, marital status, age, sex, disability, and an indicator for whether the beneficiary was a nursing-home resident; the characteristics of the individual's coverage (also obtained from the survey), including Medicaid coverage, prescription drug coverage, and an indicator for whether the policy was obtained through a former employer, union, or other entity (since the premiums for policies obtained through a group are often subsidized); prior Medicare reimbursements for the individual (obtained from **HCFA claims**); and market characteristics, including the published Part A and Part B AAPCC rates for the market area. Beneficiaries for whom a former employer or group paid the **entire** premium were excluded from the sample. This left a total

of 2,790 individuals, spread over the 44 distinct market areas that contained one or more risk plans with 1,000 or more enrollees as of February 1990.

C. ESTIMATES OF THE COMPETITIVE EFFECTS OF RISK PLANS ON THE FFS SECTOR

The estimated effects of the risk program on the marketplace were not definitive. The results suggest that these issues must be analyzed further to provide reliable answers to the questions that were examined. The studies suggest some alternative explanations for the estimated relationships and the difficulty of disentangling such influences from any possible effects of increasing the penetration of risk plans.

1. The Estimated Relationship between FFS Reimbursements and Medicare Risk Plan Penetration Rates Is Sensitive to the Statistical Model

Penetration rates varied widely across market areas and over the 5-year period examined. As shown in the following table, 70 percent of the 108 counties in the sample had penetration rates of less than 5 percent in 1984, when only demonstration risk plans were operational; by 1988, only 31 percent of these counties had such low rates. The proportion of counties whose penetration rates exceeded 20 percent rose from 2 percent in 1984 to 19 percent in 1988. The mean penetration rate for all of the sample counties grew from 4.7 percent to 11.8 percent over the period.

DISTRIBUTION OF COUNTY PENETRATION RATES, BY YEAR (in Percent)					
Penetration Rate	1984	1985	1986	1987	1988
Less than 5%	70 %	54 %	36 %	30 %	31 %
5-10%	11	20	25	25	26
10-20%	17	19	20	21	24
More than 20%	2	7	18	24	19
Mean Penetration Rate	4.7 %	6.9 %	10.7 %	12.5 %	11.8 %

SOURCE: Stacked Demographics File.

NOTE: Only counties whose sample sizes exceeded 200 are included. The sample includes 108 counties.

Penetration rates by *market* area in 1988 for those areas included in this **study** ranged from less than 1 percent in Charlotte, North Carolina, to 41 percent in Duluth, Minnesota; 6 of the 48 areas in the study had penetration rates of 20 percent or more (Table VII.1). The median rate was 7 percent.’

Average Medicare reimbursements for the samples of beneficiaries examined also varied widely across market areas, ranging from a low of \$1,181 (Worcester, Massachusetts) to a high of \$3,551 (Detroit, Michigan) in 1988. However, simple correlations between average reimbursements and penetration rates for the 108 counties showed almost no relationship (a correlation of .05). The correlation between reimbursements and the penetration rate for *the previous* year was considerably larger but still modest (.20). On the other hand, the correlation between the **change** in penetration rate and the change in reimbursements from 1985 to 1988 was **negative** (-.16, based on the concurrent change in the penetration rates, and -.21, based on the change in the lagged penetration rate).

A variety of statistical models were estimated to determine the effect of HMO penetration on **FFS** costs, yielding widely varying results--some suggesting that the penetration of risk plans into the Medicare market has no effect on FFS costs, while others indicating that FFS costs declined considerably for modest increases in penetration rates. The models that were estimated include the following:

- A simple regression model that included observations from all 4 years, without accounting for the nonindependence of different years for given sites
- A “partial adjustment” model analogous to Welch’s, in which lagged values of FFS costs were used as a control variable
- Various **fixed-effects** models, based on different assumptions about the form of the relationship (linear and nonlinear) between HMO penetration rates and FFS costs
- Change models that examined the effects of the change in penetration rates from 1985 to 1988 on the change in reimbursements over this period

‘Table VII.1 contains 54 market areas because it includes descriptive statistics for 6 areas (highlighted in boldface type in the table) that were included in the analysis of medigap premiums described below but did not have enough new enrollees in 1987 and 1988 to be included in data set used for the analysis of FFS costs.

TABLE VII.1

PENETRATION RATES, AVERAGE FFS REIMBURSEMENTS, MEDIGAP PREMIUMS,
AND HMO PREMIUMS BY MARKET AREA

Market Area	Percent Enrolled in HMOs, 1988	1988 Average Reimbursements	1990 Average Medigap Premium	1990 Average HMO Premium
Duluth, MN	40.6%	161,633	\$47.11	332.95
Minneapolis, MN	36.4	2,419	65.69	40.68
Honolulu, HI	31.3	1,696	39.26	33.60
Portland, OR	30.0	1,817	53.73	37.07
San Francisco, CA	23.3	2,734	64.94	45.00
Los Angeles, CA	21.7	3,318	61.73	10.43
Miami, FL	17.4	2,545	72.04	0
Rochester, NY	16.7	2,135	64.19	62.96
Las Vegas, NV	15.5	2,985	59.63	15.00
Pueblo, CO	15.5	2,483	67.68	45.15
Phoenix, AZ	15.4	2,850	59.48	0
Seattle, WA	15.1	2,196	59.87	30.62
Albuquerque, NM	14.3	3,001	51.34	25.25
Wichita, KS	13.5	2,268	61.74	22.10
Denver, CO	13.2	2,490	70.85	52.68
Reno, NV	10.6	1,914		
Worcester, MA	9.4	1,181	72.73	59.69
Hampshire County, MA	9.1	2,077	60.35	59.72
Daytona, FL	8.8	2,293	58.15	12.00
New York, NY	8.3	3,142	54.15	15.00
Corpus Christi, TX	8.2	2,897	77.18	18.00
Chicago, IL	7.8	1,976	55.04	37.69
Providence, RI	7.3	2,243	53.61	24.00
Des Moines, IA	7.3	2,302	70.88	38.00
Pittsfield, MA	7.0	2,542		-
Boston, MA	7.0	2,461	67.34	71.10
Indianapolis, IN	6.9	2,235	86.00	65.59
NW Minnesota	6.6	1,610		
Kansas City, MO	6.6	.	57.31	46.50
Omaha, NE	5.8	2,048	59.85	30.00
Bridgeport, CN	5.3	2,331	52.63	47.41
Vineland, NJ	5.3	2,930	53.65	51.97

TABLE VII.1 (continued)

Market Area	Percent Enrolled in HMOs, 1988	1988 Average Reimbursements	1990 Average Medigap Premium	1990 Average HMO Premium
Flint, MI	5.3	3,205	45.82	36.45
Ann Arbor, MI	5.2	2,713		
Detroit, MI	4.7	3,551	49.23	35.00
Cleveland, OH	4.6	2,233	58.25	40.43
Lansing, MI	4.4	2,417	58.18	45.43
San Antonio, TX	4.4		62.11	0
St. Louis, MO	4.3	2,510		
Philadelphia, PA	3.9	2,683	62.64	35.76
Pittsburgh, PA	3.8	3,012		
Jacksonville, FL	3.6	2,392		
Buffalo, NY	3.2	2,038	70.15	29.33
Washington, DC	2.5	2,817	60.72	51.65
Milwaukee, WI	2.3	3,410	71.81	43.89
Albany, NY	2.3	2,261		
Paramus, NJ	2.0	2,425	52.42	39.43
Sacramento, CA	1.5		75.56	47.45
Houston, TX	1.2	2,384		
Dallas, TX	1.2	2,776	68.09	34.55
Tulsa, OK	1.1		56.08	32.00
Charlotte, NC	0.8	1,402		
Louisville, KY	0.1	-	50.44	0
Atlanta, GA	0.1	-	57.70	31.97

SOURCE: The percentage enrolled figures were obtained from the Stacked Demographics File (HCFA). Average reimbursements were calculated from MADRS data for samples of beneficiaries. Medigap premiums are averages calculated from the survey of beneficiaries. The HMO premium was computed from HCFA's monthly reports on the status of the risk program.

NOTE: Sites for the analysis of average FFS reimbursements and the analysis of premium rates differ, since the two studies were conducted based on data collected at different times, and because the set of HMOs in operation at those times differed. The study of medigap premiums was based on survey data collected from nonenrollees in each market area having one or more HMOs with 1,000 or more enrollees as of February 1990. The study of the effects of penetration rates on FFS costs was based on data collected on nonenrollee for the biased selection study. Thus, data are available on nonenrollee reimbursements only for areas having one or more HMOs with 1,000 or more new members during 1987 or 1988.

- Logarithmic models and models in which market areas rather than counties were the units

Essentially, we Found no relationship (a small positive, but not statistically significant estimate) based on the simple ordinary least squares models (using either current or lagged penetration rates) or on the partial-adjustment model used by Welch (1991). Thus, our estimates differ markedly from those obtained by Welch (a statistically significant negative effect of penetration on **FFS costs**).²

On the other hand, estimates obtained from the various **fixed-effects** model are consistently negative, large, and statistically significant, implying that FFS costs fall by about 5 percent for each 10 percentage point increase in the penetration rate. The estimates from the fixed-effects model are fairly robust, differing only slightly according to the penetration rate variable used (that is, the rate for the current year or the previous year), and remaining large and statistically significant overall regardless of whether the effect of a given change in the penetration rate on **FFS costs** is assumed to be constant or to vary according to the level of the penetration rate. The models in which the estimated effects depended on the level of the penetration rate indicate that the effects of increasing penetration are essentially zero when penetration rates are low (less than 5 percent), are very large for moderate initial penetration rates (5 to 15 percent), and then drop considerably for areas in which penetration rates are over 15 percent.

The relationship between market penetration and FFS costs is statistically significant but somewhat stronger for Part A than for Part B costs, and appears to be strongly linked to hospital days. Part B costs and hospital admission rates decline by about 4 percent with every 10 percentage point increase in penetration rates. The relationship between market penetration and hospital days

²Welch actually estimated the effects of the penetration rate on *total* Medicare costs (that is, risk program costs and FFS costs combined), but noted that the effects of the risk program account for at most 0.5 of the estimated 1.2 percent effect on costs with a 10 percentage point increase in penetration rates. However, this estimate implies that risk plans experienced neutral selection. Since risk plans actually experience favorable selection and HCFA pays more than it would have under FFS care For enrollees (see Chapter III), the Medicare cost reduction in the FFS sector must be even larger than Welch's estimated short-run and long-run reductions in total costs.

and Part A costs is somewhat stronger--both fall by nearly 6 percent with every 10 percentage point increase in penetration.

Although the fixed-effects model estimates are less subject to a common type of bias than the other models and yield fairly stable estimates for different specifications, the estimates are too large to be taken seriously, especially given the relatively weak mechanism by which they are presumed to come about. As discussed earlier, there is no reason to expect physicians to lower their prices or reduce the service utilization of their FFS patients in response to increased competition from HMOs for Medicare patients, because they have no incentive to do so, nor do payors exert control over their behavior. In fact, the expectation is that the volume of services and prices may increase as physicians attempt to maintain their income. Even the one mechanism hypothesized to reduce FFS costs as HMO penetration increases--that is, the spillover effects on the FFS practices of physicians who also treat FFS patients--seems extremely weak. Practicing cost-effective care with their FFS patients is likely to reduce physicians' income. Furthermore, the patients of these physicians may prefer the more resource-intensive style of care and may have declined to join the HMO (and pay more for alternative coverage) to ensure that they have access to this style of care. Thus, the physician must practice accordingly or risk losing the patient to a more accommodating physician. Finally, these spillover effects would not affect the behavior of physicians who are not affiliated with an HMO, or those who have very few HMO patients. Thus, penetration involving staff model HMOs or some group model HMOs would have no effect on FFS reimbursements in an area.

One possible explanation for the high estimate is that the observed correspondence between higher penetration and slower growth in FFS costs is due to "regression toward the mean"--that is, areas with the highest initial costs may have slower-than-average growth in FFS costs and move closer toward the overall mean in subsequent years. Conversely, areas with low initial costs may experience the greatest growth in subsequent years. These trends could occur for many reasons, as discussed later.

However, an alternative model designed to control for regression toward the mean led to similar estimates. The change in the logarithm of FFS costs (which can be interpreted approximately as the percentage change in costs) between 1985 and 1988 was regressed on the change in penetration rates over this period, controlling for 1985 FFS costs. The changes in income per capita, physicians per 1,000 residents, and hospital occupancy rates were controlled for. The coefficient on 1985 FFS costs was positive and statistically insignificant, suggesting that regression toward the mean did not occur. According to the model estimates, FFS costs drop by about 7 percent with a 10 percentage point increase in risk plan penetration, regardless of whether the model controlled for the level of 1985 costs.

2. Medigap Premiums Are Not Reduced in Response to Competition From Medicare Risk Plans

Competition from Medicare risk plans appeared to have a small but statistically significant *positive* effect on the monthly amount paid by Medicare beneficiaries in the FFS sector for medigap coverage. Medigap premiums were remarkably stable for areas with very different penetration rates:

<u>Risk Plan Penetration Rate</u>	<u>Number of Markets</u>	<u>Average Monthly Premium</u>
Less than 3%	11	\$61.55
3 to 5%	9	\$57.83
6 to 11%	9	\$57.14
12 to 19%	9	\$62.06
over 20%	6	\$58.01

However, regressions of the amount paid for medigap coverage on local HMO penetration rates, controlling for various beneficiary and market-area characteristics that could affect medigap premiums, yielded a statistically significant but small estimated effect in the opposite direction of what was initially expected. For every 10 percentage point increase in market penetration, medigap premiums *increased* by **\$2, or** by about 3 percent of the mean value.

Medigap premiums were unaffected by the premium charged by Medicare risk plans. Medicare risk plans attempt to draw beneficiaries away from medigap policies by setting premiums below the rates charged by medigap insurers. Thus, in every market area but one (Boston), the average medigap premium paid by beneficiaries exceeded the average premium charged by risk plans, and the average HMO premium (\$35) was only about half as large as the average medigap premium (\$61) (see Table

VII.1). When the average risk plan premium for the area was included as an additional variable in the model, the estimates indicated a small but statistically significant positive relationship--a \$10 reduction in monthly risk plan premiums was accompanied by a \$2 reduction in medigap premiums. However, a statistical procedure (instrumental variables) that controls for the possibility that medigap premiums also affect risk plan premiums yielded much smaller and statistically insignificant estimates of the effects of risk plan premiums on medigap. The estimated effect of penetration rates on medigap premiums did not change.

The positive effect of risk plan penetration on medigap was unexpected, but could be due to the influence of biased selection. As shown in Chapter III, risk plans experience substantially favorable selection. As this group of healthier-than-average beneficiaries withdraws from the FFS market, the average FFS cost per beneficiary rises. Thus, average costs to medigap insurers will rise. When penetration rates are low, this effect is minimal. However, when a substantial proportion of **healthier-**than-average beneficiaries withdraw from the market, the effect on FFS costs, and thus on the costs to medigap insurers, becomes noticeable. Some weak evidence for this hypothesis was obtained from an additional regression in which a measure of biased selection (the adjusted ratio of prior reimbursements for enrollees) was included as a control variable. The coefficient on' the penetration rate became smaller and statistically insignificant, but was still positive, and the selection bias was not statistically significant.

Three possible reasons explain why the greater market penetration of risk plans may not force medigap insurers to hold their premiums down:

- ***The subsidization of HMO premiums by AAPCC capitation makes price competition infeasible for medigap insurers.*** In five areas (Miami, Los Angeles, San Antonio, Phoenix, and Louisville) most or all of the risk plans in operation charge zero premiums because the plans' expected AAPCC payments exceed the plans' expected costs of (plus normal profit from) providing Medicare-covered services, and plans are required to use the surplus to lower their premiums. In these areas and others where HMO premiums are significantly lowered by this mechanism, Medicare supplemental insurers will be unable to be price-competitive. While competition from the HMO may prevent the medigap insurers from raising premiums as much as they might otherwise, the divergence between zero and the typical medigap premium is so large (\$60 per month for our sample) that virtually any beneficiaries who would be concerned primarily with price would have already switched. Thus, medigap insurers may ignore the HMO, and simply compete with other medigap insurers for the remaining portion of the market that will not join an HMO regardless of the price differential.
- ***Medigap insurers may target groups more than they do individuals.*** Many beneficiaries receive medigap coverage in addition to extra benefits from a group plan--for example, through their former employer. These beneficiaries usually have incentives to remain in their employers' plan (for example, extra benefits, spousal coverage, guaranteed coverage, and continuity of coverage), despite the availability and lower premium of HMOs.
- ***Medigap insurers recognize the importance of physician ties.*** Many beneficiaries have a strong attachment to a particular physician or physician group and will not forsake that relationship for the lower HMO premium, even if the difference in premiums is substantial (penetration rates even in areas with zero premiums are less than 22 percent). Medigap insurers rely on this factor rather than on price to attract clients.

Three other reasons explain why our analysis would fail to detect a negative effect of risk plan penetration on medigap premiums, even if one existed:

- ***The observed positive relationship between HMO penetration and medigap premiums may be spurious.*** Areas whose utilization and costs of Medicare-covered services are highest are the areas whose AAPCCs are the highest. These high rates attract HMOs, and the HMOs grow rapidly, in part because they offer very low premiums that are subsidized by the high AAPCCs, and, in part, because they market aggressively in response to the profit potential. However, the high fee-for-service use and prices of medical care also lead to higher Medicare supplemental insurance premiums. Thus, both the HMO penetration rate and the medigap premiums may be driven by local utilization patterns and prices, leading to a spurious correlation. However, including area AAPCC rates as a control variable in the model fails to capture such an effect, if it exists. Ideally, the model would control for the gap between AAPCC rates and the cost of delivering care

efficiently in the area, since that is what has the greatest influence on risk plan penetration.

- ***The causality may be reversed.*** Areas whose medigap premiums are highest may be those in which beneficiaries are most likely to join HMOs. Although we use 1988 penetration rates to predict premiums paid in 1990, it may still be the case that our results reflect the effect of medigap premiums on HMO penetration rates, rather than the converse, as intended. No data on earlier medigap premium rates are available to control for this possible effect.
- ***Data used in this study are inadequate to provide a good test of the effects of penetration.*** The survey data reflect what beneficiaries pay, not what Medicare supplemental insurers charge. Although some correspondence exists between the premium charged and the out-of-pocket payments of beneficiaries, this difference (which arises because employers or other entities pay part of the cost) weakens the relationship between HMO penetration and medigap rates. Moreover, the sample comprises only 44 market areas--the implicit unit of observation in this analysis--and some market areas are represented by a small number of sample members. Finally, measures of the benefits covered by the sample members' medigap policies are unavailable. If beneficiaries in high penetration areas tend to be more likely to have more extensive benefit coverage through their medigap policy, the premium they pay may be higher, leading to a spurious positive relationship between HMO penetration rates and Medicare supplemental premiums. This effect could occur if medigap insurers compete with HMOs by increasing benefit coverage rather than by holding down premiums. The higher costs and utilization rates in high-penetration areas may also inspire beneficiaries to purchase more extensive and expensive medigap coverage. The higher-priced medigap policies may actually be a better value than the lower-priced policies in other areas; but we are unable to test this hypothesis with our data.

The problems with the analysis suggest that measuring the relationship between medigap premiums and HMO penetration precisely will be difficult, even if better data were available. However, the explanations for why medigap premiums may not respond to increasing HMO competition, in conjunction with our estimates, suggest that, even if the growth in Medicare risk plans does restrain medigap premiums, the effect is likely to be small.

D. DISCUSSION

Although the statistical evidence in some cases suggests a different interpretation, our conclusion is that competition from Medicare HMOs has little or no effect on either FFS costs or medigap premiums. FFS physicians and other providers have no incentive to change their practices as they lose patients to Medicare HMOs--in fact, their incentive is to **increase** utilization by FFS patients or

raise their prices to offset their loss in income. Medigap insurers are unable to be price competitive with Medicare HMOs in the markets in which HMO premiums are very low. Thus, neither HCFA nor beneficiaries who continue to receive FFS care are likely to benefit from any market effects of risk plan growth or behavior.

While several of the estimates of risk plan penetration effects on FFS reimbursements are too large to be believed, it is possible that there are some effects. The hypothesized mechanism--the spillover effects on the FFS practices of HMO physicians who see Medicare patients under both types of arrangement--is too weak to result in measurable effects on Medicare FFS costs. However, it is possible that areas with high Medicare risk plan penetration also have high HMO penetration among the non-aged, and this penetration may have led indemnity insurers to press providers to be more cost-effective. If this general pressure forces FFS providers who treat Medicare and non-Medicare patients to adopt more cost-effective management practices, and they apply these practices to all of their patients, we could observe a decline in Medicare FFS reimbursements. However, we have no evidence to support this chain of relationships and find it to be less plausible than alternative explanations for our estimates. So what explains the statistical estimates?

One interpretation of the estimated relationship is that both a faster-than-average increase in penetration rates and a slower-than-average increase in Medicare costs tend to occur in areas with a *history of high* costs. HMOs tend to expand most rapidly in areas whose AAPCC rates are highest, which are calculated from average Medicare FFS costs from three to eight years prior to the current year. At the same time, costs in areas whose costs are especially high three to eight years prior to the current year may tend toward the mean by growing at slower-than-average rates.

Perhaps the most compelling explanation along these lines is that the overutilization of hospital services may have been particularly pronounced in these high AAPCC areas prior to PPS, and, as lengths of stay declined in response to the PPS system, greater reductions were possible in those areas than in areas with more appropriate utilization rates. Thus, the high prior use would have created

high AAPCC rates and the accompanying growth in HMO enrollment, but FFS utilization rates in these areas would have declined faster than in other areas. There is some evidence for this argument, since the estimated effect of penetration rates on hospital days is larger than its estimated effects on other measures of use.

Other explanations for why rising penetration rates might accompany slower-than-average growth in FFS reimbursements include other competitive effects throughout the market and a natural regression toward the mean. For example, high levels of utilization in the past may have prompted medigap insurers to raise their rates, which could make policies unaffordable for some beneficiaries. The lack of such coverage, in turn, is likely to constrain utilization. Another form of increased competition may be an inflow of physicians to the area in response to the high demand for services. The increased supply of physicians may hold down price increases (although empirical evidence from other studies suggests that aggregate medical costs increase with physician supply, due to the same lack of market effects noted earlier). Other (nonphysician) costs per unit of service also may decline (or grow more slowly) in the areas in which these unit costs were highest, as the supply of such services (for example, home health services and SNF beds) increases to meet the above-average demand. Finally, average costs in counties whose costs are particularly high may simply regress toward the mean for all counties over time, as do costs for other groups of individuals whose costs are above average. All of these trends will contribute to keeping the growth rate of costs low. Even though none of the trends is due to growth in **HMOs**, they will occur at the same time that **HMOs** are growing, leading to the observed empirical relationship.

Our attempts to control for these effects of prior levels of utilization are too crude to capture the complexity of these relationships and the diversity across market areas. However, given that we have only 107 counties that contain an adequate number of enrollees to support our analysis, more complex models cannot readily be estimated. Nor are good data available on the many factors that influence area costs and utilization rates. The partial adjustment model, similar to the model used

by Welch, comes the closest of all models estimated to reflecting a time-delayed market response to high costs. However, whereas we find essentially no effect (a small positive estimate), Welch finds a statistically significant effect that implies fairly large reductions in costs (4 percent) over the long run for a 10 percentage point increase in penetration. Both studies suffer from three factors: (1) there are few counties with enough risk plan penetration to affect FFS costs, (2) the estimates are not particularly robust, and (3) most FFS costs will tend to be affected more by the HMOs' share of the **total** local market than just their share of the Medicare market. Thus, the effects of competition from risk plans on FFS costs are ambiguous.

The analysis of the effects of Medicare risk plans on medigap premiums suffers from similar problems of alternative possible causes for the observed relationships, but here it is clear at least that competition from risk plans does not **reduce** medigap premiums. It may well be that the small positive effect of penetration on medigap premiums is due to the effects of favorable selection: as risk plans draw an increasingly large population of the good risks from the market for supplemental coverage, average utilization among those who continue to hold medigap policies increases, forcing premiums up. Whether the estimated effect is really due to the influence of favorable selection into risk plans or to alternative factors that are correlated with both medigap premiums and risk plan market penetration cannot readily be determined. It is clear, however, that medigap insurers cannot be price competitive with Medicare risk plans in many areas, especially in such areas as Miami and Los Angeles, where premiums are zero, and penetration is fairly high. Thus, it is not surprising that risk plan market penetration does not reduce the out-of-pocket costs of beneficiaries who continue to purchase medigap policies.

VIII. IMPLICATIONS OF THE EVALUATION FOR MEDICARE RISK CONTRACTING

After seven years of operation, the Medicare risk program has not yet achieved its primary underlying goal: to reduce costs to HCFA by providing Medicare-covered care in a more cost-effective manner. However, the program has been more successful at accomplishing other objectives. As intended, the program has increased the range of choices for beneficiaries, and has given enrolled members more extensive coverage at a lower premium than medigap, the primary alternative source of coverage for Medicare deductibles and coinsurance. Furthermore, **HMOs** appear to have met the goal of providing care that is of comparable quality to but less resource-intensive than the care provided in the FFS sector. Thus, the potential exists for the risk program to achieve its primary goal--to reduce Medicare costs. A modest change to the AAPCC payment mechanism could make the program at least cost-neutral to **HCFA**. The challenge, however, is to identify changes that will eliminate the losses to HCFA without discouraging participation by **HMOs** and beneficiaries.

A. IS THE RISK PROGRAM ACHIEVING ITS GOALS?

The primary goals of the Medicare risk program are to:

- Reduce the costs to HCFA
- Provide health care to Medicare beneficiaries more efficiently
- Provide care of equal or superior quality to the care provided in the **FFS** sector
- Increase beneficiaries' range of choices of health care delivery systems
- Lower the cost to Medicare and the out-of-pocket costs for beneficiaries who remain in the FFS sector

To achieve these objectives, the program must also be sufficiently attractive financially to **HMOs** to make them join and remain in the program. The purpose of this evaluation was to (1) assess whether each of these goals has been accomplished, (2) estimate the size of the various effects of the risk

program, (3) identify the types of beneficiaries, **HMOs**, and market areas for which the program had the greatest effects, and (4) determine the reasons for the success or failure of the program to achieve its goals.

1. The **Risk** Program Increases Rather Than Reduces Costs to HCFA

We estimate that the risk program costs HCFA 5.7 percent more in reimbursements to **HMOs** than would have been spent had enrolled beneficiaries received their Medicare benefits in the FFS sector rather than in a Medicare risk plan. The program overpaid for both Part A and Part B services, but the margin was substantially larger for Part A (8.5 percent, compared with 2.7 for Part B). The program increased costs to HCFA for every subgroup of enrollees examined, but the increases were particularly large for enrollees in areas whose AAPCC rates were high (7.6 percent), those in staff-model plans (7.8 percent), and those in plans that did not charge a premium (8.3 percent).

The reason for the cost increase is favorable selection. Beneficiaries who enroll in Medicare risk plans are simply healthier and less inclined to use health care than those who do not enroll, and these differences are not fully reflected in the demographic risk factors used to adjust the county AAPCC payment rate for a particular enrollee. Simply put, **HMOs** are paid 95 percent of the AAPCC for enrolled beneficiaries, but Medicare reimbursements for these individuals would equal only about 90 percent of their AAPCC rate on average had they remained in the FFS sector. Thus, rather than saving 5 percent as intended, HCFA spends 5.7 percent more ($.950/.899 = 1.057$).

The failure of the AAPCC to capture differences in the health status indicators of enrollees and nonenrollees accounts for over 80 percent of the gap between the AAPCC and projected FFS reimbursements for enrollees. The single most important indicator is a history of serious illness (cancer, heart disease, or stroke), but differences in functioning and self-ratings of health also contribute to the overpayment. Differences in attitudes toward health care account for 14 percent

of the AAPCC overestimate of FFS costs for enrollees; socioeconomic differences account only for 3 percent of the difference.

2. **HMOs Reduce the Utilization of Expensive Services by Sizeable Margins, but Reductions Are Not Always in the Expected Ways**

HMOs are successful at reducing the utilization of several health care services. They reduce hospital days by **17** percent, home health visits by 50 percent, and the proportion of beneficiaries with frequent physician visits (**12 or more per** year) by 10 percent.

HMOs also increase the utilization of some services, primarily in ways that one would expect. Compared with nonenrolled beneficiaries with similar characteristics, HMO members were more likely to have a physician visit in the past month, to have three or more visits per year, and to have a physical exam, reflecting both the greater emphasis in **HMOs** on preventive care and the absence of a **sizeable** deductible or copayment. **HMOs** also increased the proportion of beneficiaries with a SNF stay, indicating that **HMOs** substitute SNF days for hospital days more frequently than do FFS providers.

Of special interest, given the findings of previous studies and conventional wisdom, is that Medicare risk **HMOs** do not reduce hospital days by reducing the number of admissions, but by shortening the average length of stay. **HMOs** have no effect on hospital admissions, but reduce hospital stays by nearly 1.5 days (17 percent) on average. Similarly, **HMOs** do not affect the likelihood that beneficiaries receive home health care--the large effect on home health visits is due entirely to the reduction in the number of visits per home health patient. The impact on the length of hospital stays is remarkable, given that hospitals that serve FFS patients have a similar incentive under Medicare's prospective payment system to shorten hospital stays. Comparisons of length of stay among enrollees and nonenrollees with particular conditions (stroke and colon cancer) reveal differences of similar magnitude, allaying concerns that the estimated effect could be a statistical artifact due to the fact that enrollees have less serious conditions.

HMOs reduce the utilization of expensive services rendered to both inpatients and ambulatory patients. For each of three different chronic ambulatory problems (joint pain, chest pain, and urinary incontinence), HMOs significantly reduced referrals to specialists and follow-up visits. HMOs also reduced the frequency of various tests and procedures for both ambulatory and hospital patients. For example, HMOs reduced the use of X-rays among patients with urinary incontinence, and reduced the number of days in intensive care units, the amount of physical therapy, and the use of discretionary tests and procedures (for example, multiple CAT-scans, EEGs, and echocardiograms among stroke and colon cancer patients).

HMOs *increase* the use of some services by beneficiaries in the poorest health, but these are the individuals for whom HMOs reduce the utilization of other services by the greatest margin. For example, HMO enrollees in poor health or with functional impairments were **more** likely to be admitted to the hospital than would have been the case had they remained in the FFS sector. On the other hand, HMOs reduced hospital days and home health visits most for beneficiaries in the poorest health.

The reductions in service use show clearly that the potential for cost savings to HCFA exists. Rough calculations of the value of the health care resources saved by HMOs suggest that these gains in efficiency could reduce the costs of medical services by approximately 10.5 percent. Other savings may also be possible through the lower prices that HMOs may negotiate for provider services and the HMOs' less intensive use of expensive resources for hospitalized and ambulatory patients.

3. HMOs Deliver Care That Is of Comparable Quality to the Care Rendered by FFS Providers

The reductions in service use do not appear to have led to poorer health outcomes among HMO members. HMO and FFS patients with either stroke or colon cancer experienced very similar rates of death and hospital readmission. Rates of in-hospital complications (for example, postoperative fever, congestive heart failure, and aspiration) **were also similar. For three separate** groups of ambulatory patients--those with urinary incontinence, chest pain, or joint pain over the past year--

HMO patients were equally likely as FFS beneficiaries to be symptom-free by the time of the interview. Furthermore, over 90 percent of HMO members were satisfied with the various aspects of their care examined, and 93 percent said that they would recommend the HMO to a friend.

Although the primary interventions and outcomes are very similar for HMO and FFS patients, there are a few indications that in some situations HMOs may be delivering less adequate inpatient care than the FFS sector. The distance between the tumor and the margin of resection in surgery for colon cancer was significantly shorter For HMO surgeons than for FFS surgeons, with the average distance for HMO patients being equal to the recommended minimum distance. Similarly, HMO physicians responded to most complications in the same manner as physicians in the FFS sector, but were much less likely to administer chest X-rays for evaluating the postoperative fevers of colon cancer patients (recommended in the literature for 80 to 100 percent of such patients), and they administered pre-operative antibiotics, which are recommended by the American Society of Hospital Pharmacists for all surgical cases, less regularly than FFS physicians. These differences indicate that in a few areas of inpatient care there may be more instances of inadequate treatment by HMO providers than by FFS providers.

However, there is no indication that HMOs deliver poorer (or better) **ambulatory** care. HMO patients with joint pain or urinary incontinence were equally likely as FFS patients to see a physician for their problems. HMO patients with chest pain were significantly less likely than their FFS counterparts to see a physician, but the difference was due entirely to differences in careseeking behavior. (In both HMOs and the FFS sector, every patient who contacted their doctor about chest pains was able to see a physician. HMO patients were more likely to say that they did not contact their physician because they felt that their problem was “not bad enough.”) HMO patients who continued to have joint pain were less likely than similar FFS patients to report an improvement in response to their treatment, but no such HMO-FFS difference in improvement was observed for

those continuing to have chest pain or urinary incontinence, nor was any difference observed for the proportion of beneficiaries whose symptoms disappeared, for any of the conditions.

HMO members were somewhat less satisfied than FFS beneficiaries with the quality of their care, but were much more satisfied with their out-of-pocket costs and reported broader benefit coverage. Although a very high proportion of both groups rated their level of satisfaction with their care and caregivers as good or excellent, HMO enrollees were significantly less likely to rate it as excellent, whether it pertained to the personal aspects of care, the convenience of care, or the perceived quality of care. On the other hand, HMO members were much more likely than nonmembers to be highly satisfied with their costs, and they identified fewer needed services for which they were not covered.

These findings suggest that **HMOs** are cutting costs without cutting corners on the quality of care. The absence of differences in outcomes indicates that any differences in quality between **HMOs** and FFS must be modest, if they exist. The fact that 93 percent of beneficiaries would recommend the HMO to a friend suggests that enrollees are clearly willing to trade off lower costs and better benefits for a somewhat lower level of satisfaction with their care.

4. Some HMOs Do Well Financially in the Medicare Program, While Others Do Not

To increase the range of choices for Medicare beneficiaries, the risk program must be expanded to additional cities and wider market areas. Such changes, in turn, require that the risk program be financially attractive to **HMOs**.

About half of the Medicare risk plans earn a profit, and during the 1987 to 1990 period nearly half (44 percent) of the 117 **HMOs** that contained 1,000 or more members discontinued their risk contract in light of financial difficulties (the rate of nonrenewal was much higher among smaller risk plans). Furthermore, very few new risk plans have joined the program in the last several years, thus reducing the number of active risk plans from 134 in January 1987 to 81 in January 1992. While total enrollments in the risk program have increased each year since its inception, established risk plans were offered only in 48 metropolitan areas in 1988, containing 53 percent of the national Medicare

population, and the number of market areas with risk plans has declined to 37 since then. Thus, the goal of making a managed-care option widely available to Medicare beneficiaries has not yet been realized.

The HMOs that have prospered under Medicare risk contracting tend to be those that receive high AAPCC capitation rates, those in which Medicare members represent a sizeable proportion of the HMO's membership, and those that experience the most favorable selection. Most of these same characteristics also distinguished plans that were still in existence in 1991 from those that dropped out during the preceding four years. Based on these findings, and on the fact that HMOs in some areas do not charge a premium, it appears that some HMOs are paid too much and others not enough to cover their costs on risk contracts. While some HMOs prosper and continue to hold a risk contract in areas whose AAPCC rates are modest, the failure rate in these areas exceeds 50 percent, suggesting that the program is not likely to grow or expand unless payment rates increase. On the other hand, in many of the high AAPCC areas, the low premiums and extra benefit coverage encourage Medicare beneficiaries to join an HMO.

This disparity raises a clear conflict among program goals: in order to save money, the risk program must stop paying HMOs more than HCFA would have spent on FFS care for the enrollees. But cutting back on payments will dampen the growth of the program and make other HMOs even less interested in joining the program than they are already. Accomplishing both goals simultaneously will clearly require very different changes to AAPCC payments in some areas than in others.

5. Medicare Risk Plans Have Little or No Effect on Medicare FFS Costs or on Medigap Premiums

Finally, there is no credible evidence that the growth in Medicare risk plans in a market area affect FFS costs or medigap premiums in that area. Although these possible side effects of the risk program were desirable, rather than *expected*, one study (Welch, 1991) has argued that FFS costs do decline in response to the penetration of risk plans, especially in the longer run. We found some

statistical evidence to support this finding, but other evidence is inconsistent with it. However, the mechanisms by which such effects are expected to occur are extremely weak and are more likely to increase than to reduce costs in an area. Thus, we believe that estimates which show an effect of **HMO** penetration on FFS reimbursements are likely reflecting other factors that influence both market penetration and the changes in Medicare costs.

Medigap premiums appear to *increase* slightly with market penetration. This small effect may be due to the influence of favorable selection into **HMOs**, leaving medigap insurers a less healthy mix of subscribers than before. The **sizeable** gap between the HMO and medigap premiums in many market areas (the median premiums were \$35 and \$60, respectively) suggests that medigap insurers are not able to be price-competitive in most areas and thus do not adjust their premiums in response to HMO premiums or growth. For some risk plans, premiums are low because HCFA requires that risk plans use any difference between their expected AAPCC payments and their expected costs (including their normal profit rate) to reduce premiums or increase benefits to beneficiaries. On the other hand, the medigap insurers may be somewhat immune to competition from **HMOs** because they may provide much of their coverage under group plans with employers which contract with the HMO for their active employees and offer medigap coverage to their retirees. Employers are likely to be reluctant to require that their employees change insurers and physicians upon retirement, and thus establish subsidized medigap coverage for their retirees through their regular indemnity plan for active employees. Recent estimates indicate that, even among firms that provide coverage to active employees under an HMO, one-third do not offer the HMO to retirees, and only 12 percent of retirees with the option choose HMO coverage (Foster Higgins, 1992).

B. LONG-RUN VERSUS SHORT-RUN CONSIDERATIONS FOR THE **RISK** PROGRAM

Despite the fact that the risk program is currently increasing costs to HCFA rather than saving money, our results which show that **HMOs** are more efficient than **FFS** suggest that managed care may still be a cost-effective system for delivering care to Medicare beneficiaries in the long run, for

at least four reasons. First, the incentives in the risk program are structured to minimize costs rather than to maximize revenues. Second, risk plans have no incentive or mechanism for shifting costs, as exists in the FFS sector--the total cost to HCFA (and revenue to **HMOs**) is fixed and predetermined. Whereas the attempt to control FFS hospital costs by setting fixed rates for each diagnosis has led to increases in the recorded severity of cases and higher levels of SNF and home health use, and while controls on physician prices have purportedly increased volume, no such cost-increasing incentives or opportunities exist under risk contracting. Third, the emphasis of **HMOs** on preventive care could generate long-term savings, or at least lead to better outcomes for enrollees. Finally, unlike the FFS sector, **HMOs** are structured to facilitate the coordination of care, and they are not subject to various Medicare regulations (for example, home health care must be delivered or supervised by a nurse in all cases) that can inhibit the FFS sector from delivering care in the most cost-effective manner.

Our results confirm the cost-saving potential of the risk program--**HMOs** do reduce utilization substantially, and do so without altering the quality of care. These efficiency gains could hold the **HMO's** cost for the medical services consumed to a level 10.5 percent or more below the amount that HCFA would have paid **FFS** providers. **HMOs** may realize further cost savings by negotiating favorable prices from providers. These advantages of **HMOs** appear to generate sufficient savings to enable HCFA to reduce its costs and **HMOs** to earn a profit, if the payment mechanism did not overpay **HMOs** for their favorable selection.

However, the long-run potential of the risk program to meet its objectives will not be achieved without some changes. Our estimates of the increased costs to HCFA are due entirely to the failure of the AAPCC payment methodology to adjust correctly for the favorable selection experienced by risk plans, and this situation will continue until the payment mechanism is improved or selection into **HMOs** becomes more neutral. Our analyses indicate that selection continues to be highly favorable even when penetration rates and enrollment levels are relatively high. **Thus**, simply encouraging the

growth of risk plans will not eliminate the cost increases to HCFA. On the other hand, some action appears to be necessary to encourage the participation of HMOs in the risk program, given the high proportion that have discontinued their risk contract and the small number of new entrants over the past several years.

C. CHANGES THAT COULD HELP THE RISK PROGRAM ACHIEVE ITS GOALS

The challenge for the risk program is that the changes required to save money for the Medicare program seem likely to make the risk program even less attractive to HMOs. Paying HMOs less than they are currently receiving is likely to make even more HMOs drop their risk plan and may prompt HMOs to raise their premiums, which will slow the growth in enrollment. Conversely, raising payments to attract more HMOs will further increase the net costs to HCFA for the risk program. What accounts for this seemingly inconsistent situation of higher costs to HCFA but financial difficulties for many HMOs? Could any changes be made to address both problems simultaneously?

1. Why Do Many Risk Plans Lose Money Despite Reducing Service Utilization and Receiving Higher Payments than FFS Providers Would Have Received?

Since plans are being paid more than FFS providers would have been paid for services to these individuals, and because plans are managing utilization successfully, why should they be losing money? Several plausible explanations for this anomaly have been proposed by HMOs and others: (1) the nonmedical costs associated with Medicare risk contracting, such as the costs of monitoring and managing utilization and the cost of marketing the plan to individual beneficiaries, may offset much of the savings from reduced utilization, especially in smaller plans; (2) substantial differences between Medicare risk contracting and HMOs' traditional line of business exist; (3) enrollment may be too low in many HMOs to spread the fixed costs and the financial risk adequately; and (4) state regulations sometimes hamper the ability of HMOs to prosper.

a. The Administrative Costs of HMOs Offset Much of the Savings in Medical Costs

Administrative costs are perhaps the single most important reason that many Medicare risk plans have financial difficulties despite providing cost-effective care and receiving higher payments than Medicare would have paid for care in the FFS sector. In order to manage the service utilization of their patients, HMOs must monitor the utilization profiles of their physicians, administer risk-sharing arrangements (such as bonus pools or withholds), educate new physicians, pay for case management services, and investigate out-of-plan use. They must process claims for hospital, SNF, home health, and physician care; recruit physicians (individuals or groups) into their network; negotiate rates and contracts with various service providers; and develop and operate a quality assurance program. HMOs must also market their risk plan, maintain records of members' entry into and exit from the plan, and confirm the eligibility of patients for whom claims are submitted. Finally, HMOs must interpret and comply with HCFA regulations for the risk program (including annual and midyear changes to Medicare-covered benefits), state laws governing HMOs, and Peer Review Organization (PRO) demands. Because FFS providers incur none of these costs, HMOs may be at least as expensive as FFS providers, despite reducing medical costs.

While HMOs will already have much of the administrative structure necessary to operate their risk program when they join the program, some of the costs are unique to the risk program and others increase with the number of risk plan members. For example, HMOs market their commercial products to groups of individuals (typically, employees of a firm), but must market their Medicare plan to individuals. Group and IPA model HMOs must often also sign separate contracts with providers for their Medicare plan (due to different utilization rates for the elderly), develop protocols specific to the elderly, contract for a different mix of services, and spend more resources on case management per member.

Estimates of the administrative expenses of HMOs range from 7.6 percent (Group Health Association of America, 1991) to 13.4 percent (Shin and Brown, 1993) of the cost of providing

Medicare-covered benefits to risk plan enrollees, which would consume a large portion of the difference between payments from HCFA and medical costs to HMOs for Medicare-covered services. According to our estimates from Chapter III, HCFA made average annual AAPCC payments of \$2,478 to HMOs in 1989 for our sample members, 5.7 percent more than the projected FFS cost (\$2,344). But the lower level of services delivered by HMOs would have cost about 11 percent less than the projected FFS cost at FFS prices (\$2,112). Using the FFS cost of delivering the lower level of services as a crude upper-bound measure of the cost to the HMOs for these medical services, we find a \$366 annual gap between payments and medical costs. Some of this differential is used to offset the premium charged to beneficiaries or to provide additional services in some plans, and the remainder covers administrative costs or is profit for the HMO. Since risk plans break even on average, we assume that none of the average differential is profit. GHAA's survey respondents (18 risk plans) for 1989 indicated that average administrative costs for risk plans were about \$21 per member month, or \$252 per year, about two-thirds of the difference between revenues and medical costs. While these calculations are very rough and will vary widely across risk plans, they give some rough indication of the importance of administrative costs in explaining why some HMOs have financial difficulty, despite being paid more than FFS providers and providing cost-effective care. Clearly, the difficulty in covering administrative costs is greatest for plans that are overpaid the least--that is, those that experience less favorable selection or have lower AAPCC rates than the typical risk plan.

b. HMOs Must Adapt to the Differences in Providing Coverage to the Nonelderly and to Medicare Beneficiaries

Because HMOs are accustomed to serving the nonaged, they must adapt in several ways to serving the Medicare market in order to be successful. One difference between the Medicare and non-Medicare lines of business is that Medicare capitation payments are based on Medicare FFS payment rates for services (for example, physician visits and specialist care), which may be lower than

the rates that HMOs are accustomed to paying providers for the same services to non-Medicare clients. Even if the provider rates implicit in the AAPCC are not lower than the rates that HMOs pay, the margin between the rate paid by the HMO and the rate paid by their competitors may be considerably smaller for an HMO's Medicare plan than for its commercial plans. Thus, while an HMO may reap large gains on its commercial plans by negotiating a favorable price for hospital or physician services, the gains from this source, if any, are likely to be considerably smaller for the HMO's Medicare plan.

A second factor to which HMOs must adapt is the much higher utilization rates among the elderly. A strong relationship exists between the ability of HMOs to control hospital utilization rates and their financial success.

Finally, the nature of the Medicare program may place Medicare risk plans at a competitive disadvantage. Risk plans must bear the full cost of any increase in the demand for services from the elimination of Medicare deductibles and copayments, whereas their primary competitor--medigap insurers--need cover only the deductible and copayment portion of any such increase. Moreover, Medicare does not cover preventive care, but HMOs do. While HMOs may charge higher premiums to beneficiaries to cover this expansion in benefits, the higher premium will weaken their competitive position relative to medigap.

c. Medicare Enrollments May be Too Low to Spread Fixed Costs and Risks Adequately

Most HMOs have modest Medicare enrollments (the median enrollment in January 1992 was about 7,000 members, much lower than the median total enrollment of about 27,000 for HMOs in general). Thus, many risk plans are unable to spread their fixed costs sufficiently to lower their cost per member month enough to be profitable. Furthermore, Medicare beneficiaries have very volatile service needs, and a single case can cost hundreds of thousands of dollars. HMOs require a substantial enrollment to protect them from such risks due simply to chance.

d. Some State Regulations Hamper the Ability of HMOs to Prosper

Some states impose restrictions on the behavior of HMOs that limit their opportunities to negotiate with providers and compete with medigap insurers. Some HMOs have indicated that their states require that they pay hospitals the (state or Medicare) DRG rate for a specific illness, rather than allow them to negotiate a more favorable per diem rate. One state requires that HMOs partially prepay physicians, rather than allowing them to pay physicians as they render services. Moreover, some states dictate the maximum premium that medigap insurers may charge, and set this rate below market value. Since risk plans feel they must set their premiums below those of local medigap plans in order to attract members, this constraint on medigap premiums limits HMO revenues.

2. How Can the Goals of Cost Savings and Program Growth Be Met Simultaneously?

What modifications can be made to the risk program to enable it to save money for Medicare without limiting program growth even further? As currently constituted, the program will never save money, even in the long run, unless the AAPCC payment mechanism is revised to account more accurately for the favorable selection experienced by risk plans. With this revision, payments to HMOs will be lower on average unless selection becomes more neutral. HMOs must bear much of the responsibility for keeping their costs in line with payments, and some can benefit by increasing enrollments and managing hospital use better. However, some of the necessary changes can be implemented only by HCFA or can be facilitated by actions taken by HCFA.

a. Payment Rates Must be Adjusted to Reflect Health Care Needs More Accurately

Our results suggest that adding one additional factor to the AAPCC rate structure--a history of 'cancer, heart disease, or stroke--could essentially eliminate the increase in costs to HCFA (provided that the plans are still paid only 95 percent of the revised AAPCC). This approach is similar to the diagnostic cost group (DCG) method developed by Ash et al. (1986), but is simpler, includes a larger proportion of beneficiaries in the high-cost group, and is not limited to the experience of the previous

year. Data from HMOs on this or a similar factor would be much easier to verify than would some of the risk factors proposed by others, such as measures of functioning; too, it would need to be updated only for beneficiaries who first encountered such health problems after enrolling in the HMO. This change would induce the greatest reductions in AAPCC payments for the plans for which the cost increases to HCFA are greatest--that is, those that experience the most favorable selection. However, our estimates suggest that the change would eliminate only the cost *increases* to HCFA; it would not lead to savings, as the program originally intended.

Several other changes to the AAPCC could benefit HMOs without increasing costs to HCFA--in particular, standardizing the rate paid within a given metropolitan area, reducing the year-to-year volatility in payment rates, and tying changes in payment rates more to current market factors than to outdated trends. These changes would make payments to risk plans more consistent with their costs for particular members or in a particular year, enable them to plan more effectively, and reduce the volatility of their financial performance on their Medicare plan.

b. Incentives for Greater Enrollment and More Neutral Selection Should Be Increased

Increasing enrollment in risk plans, especially among those individuals who require the most health care, is perhaps the best way to offset the adverse effects that a reduction in payments to HMOs for healthy risk plan members would have on program growth. Increasing enrollments would help HMOs reduce their costs per member month by spreading the fixed portion of administrative costs over more members and diluting its influence. Enrollment growth would also reduce the risk that a few seriously ill members would create overall losses for a risk plan. Encouraging the enrollment of sicker beneficiaries to create a more neutral mix of enrollees would keep AAPCC payments from shrinking as the change was implemented. This change could be especially beneficial in light of the evaluation finding that HMOs achieved their greatest cost reductions for the beneficiaries who normally have the greatest health care use.

Two changes could make enrollment more attractive to beneficiaries, including those in poor health: increasing the number of area physicians affiliated with a Medicare risk plan, and increasing the number of employers that provide health care coverage to their retirees through a Medicare risk plan. The proposed reduction in AAPCC payment rates would likely engender higher risk plan premiums for beneficiaries, which will dampen their interest in the program. Increasing the likelihood that beneficiaries could join a Medicare risk plan without changing their physicians would offset this adverse effect substantially, and could create a more neutral mix of enrollees. Various ways to encourage the participation of physicians in HMOs could be devised, including offering some form of incentive to either physicians or HMOs. Alternatively, HMOs could be offered financial incentives for net increases in enrollments of a given size or percentage. Employers could be given financial incentives to offer risk plan membership as a health care option for their retirees.

Other methods for encouraging enrollment in managed care are also possible, including open-ended HMOs and preferred provider arrangements. While different from risk plans, they give beneficiaries an opportunity to receive Medicare-covered services in a managed-care environment, while preserving some freedom of choice.

One option frequently proposed for increasing enrollment growth (for example, see ***The President's Comprehensive Health Reform Program***, February 1992)--that is, reducing the Part B premium of beneficiaries who enroll in an HMO--has limited promise, because it would be very expensive and probably ineffective. It would be difficult and probably illegal to restrict such benefits to new enrollees; hence, unnecessary Part B premium rebates would be made to 1.4 million current enrollees. Furthermore, since only about 20 percent of Medicare beneficiaries enroll in Medicare risk plans even in areas in which the risk plans do not charge any premium (a savings of \$50 to \$100 per month relative to medigap coverage), offering beneficiaries a rebate of \$5 to \$10 per month on their Part B premium is unlikely to attract many new members.

Finally, growth depends on whether HMOs with risk contracts can be encouraged to expand their market areas and other HMOs encouraged to sign Medicare risk contracts. One way to do so would be to pay a higher percentage of the AAPCC (for example, 100 percent) initially to HMOs that establish a risk plan in an area in which no other plans are operating. The percentage could be reduced each year until the 9.5 percent rate paid to established risk plans is reached. HMOs that previously had risk plans could also be polled for suggestions about the changes that could be made to convince them to rejoin the program. Nearly 90 percent of HMOs that left the risk program indicated that they would consider reentering (Bergeron, Brown, and Shin, 1991).

All of these incentives that involve payments to physicians, HMOs, or beneficiaries would have to be temporary, in order to avoid further net increases in long-run costs. The intent of the incentives is to help risk plans reach a size at which they can at least break even.

c. Reduce the Administrative Burden on Risk Plans

HCFA could also look for ways to minimize the administrative burden that risk program rules and requirements impose on risk plans. For example, HMOs have long complained that the PRO process is burdensome on and redundant for them, given their own quality assurance procedures. Mid-contract year or retroactive changes in benefits are another common complaint of risk plans. While risk plans are now allowed to bill Medicare on a fee-for-service basis for such coverage (under OBRA '90), such changes create added administrative burden for the HMOs. Some plans have also complained about having to submit adjusted community rate (ACR) calculations annually. HMOs could be polled for other suggestions that would enable them to reduce the administrative burden associated with their risk plan.

d. States Should Be Encouraged To Drop Regulations That Limit the Ability of Risk Plans to Minimize Costs

Finally, HCFA could encourage states to eliminate regulations that force HMOs to pay higher-than-market prices for hospital care or reduce their ability to impose reasonable levels of financial risk on physicians. Similarly, states could be encouraged to allow the market to determine the appropriate price for medigap policies rather than regulating premiums at artificially low prices. Such changes would introduce more competitive pressure into the market, increasing the likelihood that the twofold goal of cost reductions for HCFA and growth in the risk program can be attained.

e. Modest Changes To the Risk Program Could Enable HCFA To Reduce Costs and HMOs To Prosper

The above suggestions for change would clearly require a much more thorough examination of the possible consequences and operational concerns. They are put forth simply to illustrate the point that the potential exists to improve the risk program from the perspective of both HMOs and taxpayers. At present, HMOs in the risk program provide care that is approximately equal in quality to that rendered in the FFS sector, with more extensive benefit coverage, and at a much lower price to beneficiaries than alternative coverage. HMOs successfully reduce utilization by sizeable margins by practicing cost-effective care, and are capable of generating savings that can be shared among beneficiaries, HCFA, and the HMO. Furthermore, although numerous HMOs have left the risk program and others complain of financial difficulties, the nonrenewal rate has declined, and a high proportion of plans that have left the program would be interested in re-entering if there were meaningful reform to the payment mechanism. With a carefully planned package of changes, it appears that the considerable potential of HMOs to deliver Medicare services more efficiently could bring savings to HCFA, beneficiaries, and HMOs.

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APPENDIX A

REPORTS FROM THE EVALUATION OF THE MEDICARE HMO PROGRAM

REPORTS FROM THE EVALUATION OF THE MEDICARE HMO PROGRAM

Nineteen individual technical reports or case studies were produced from the evaluation of the Medicare Risk Program. These reports, on which this summary is based, contain much more detail about data, methodology, and findings. A brief synopsis of each report is provided below, arranged by substantive area. Copies of the reports can be obtained by contacting Jan Watterworth, Librarian, at **Mathematica** Policy Research, Inc. (609-275-2334). For questions about the contents of the reports call Randy Brown (609-275-2393) or the lead author of the report. The copying cost for each report is given in parentheses following the title (add \$2.50 to cover mailing costs).

Final Summary Report

“The Medicare Risk Program for HMOs--Final Summary Report on Findings from the Evaluation.” Randall S. Brown, Jeanette Bergeron, Dolores Gurnick Clement, Jerrold W. Hill, and Sheldon M. Retchin. Princeton, NJ: **Mathematica** Policy Research, Inc., February 1993. (\$18.60)

The various analyses conducted over the course of this four and one-half year evaluation are briefly reviewed and synthesized in non-technical language. Due to favorable selection, the Medicare risk program increases costs to HCFA, rather than saving five percent as intended. However, risk plans are successful in decreasing the utilization of various services by enrollees, especially the length of hospital stays, without adverse effects on outcomes (mortality, readmission, symptom persistence). Several analyses show that **HMOs** reduce the volume of services but do not restrict access to hospital or ambulatory care. Enrollees are found to be less satisfied than nonenrollees with various aspects of their care, but few are dissatisfied and more are more satisfied with out-of-pocket costs. Despite improved efficiency and favorable selection, only about half of the **HMOs** in the risk program are profitable. The report suggests that an adjustment in the payment mechanism for beneficiaries with a history of serious illness might eliminate the overpayment while encouraging **HMOs** to seek a more neutral mix of enrollees. **HMOs** must also control hospital days and enroll a sufficient number of members to spread the administrative costs and financial risk.

Effects on Service Use, Costs, and the Marketplace

“The Impact of the Medicare Risk Program on the Use of Services and Cost to Medicare.” Jerrold Hill, Randall Brown, Dexter Chu, and Jeanette Bergeron. Princeton, NJ: **Mathematica** Policy Research, Inc., December 1992. (\$18.20)

As a result of favorable selection, HCFA pays 5.7 percent more for enrollees in risk plans than would have been spent on them under fee-for-service. However, risk plans do reduce utilization of costly services. Medicare risk plans reduce the length of stay in hospitals by about 17 percent, but, they do not affect the rate of admissions to hospitals. Enrollees in Medicare risk plans are five percent more likely than their fee-for-service counterparts to have some physician visits, but are less likely to have frequent visits. Furthermore, reductions in hospital days and home health visits were greatest for beneficiaries who were in poor health, had physical impairments, or who died within nine months after interview. A crude estimate suggests that the

n reductions in utilization could cut medical resource use costs by 10.5 percent or more, so the potential exists to eliminate the excess payments by HCFA without driving HMOs out of the program. The report is based on survey data on more than 12,000 Medicare beneficiaries.

“The Effects of HMO Market Penetration On Medicare Fee-for-Service Costs.” Dolores Gurnick Clement, Phillip M. Gleason, and Randall S. Brown. Richmond, VA: Medical College of Virginia, December 1992. (\$3.70)

A variety of statistical models were used to estimate the impact of the Medicare risk program on the average Medicare reimbursements for the fee-for-service sector, based on Medicare claims data for 1984 to 1988 on beneficiaries in 48 distinct market areas with Medicare risk plans. The results were mixed; some of the models suggested that risk plan penetration had no effect on the fee-for-service sector, while other models indicated sizeable declines in fee-for-service costs with modest increases in penetration. The authors indicate that the mechanisms by which risk plan penetration might influence fee-for-service providers are weak and offer several alternative explanations for why fee-for-service costs may have increased the least in areas where risk plan penetration was greatest.

“Analysis of the Competitive Effects of Medicare Supplemental Insurance Benefits and Premiums: Implications for the TEFRA HMO/CMP Program Evaluation.” Dolores Gurnick Clement, Randall S. Brown, Sheldon M. Retchin, Meribeth H. Stegall, and Jon M. Thompson. Richmond, VA: Medical College of Virginia, December 1992. (\$6.20)

Contrary to expectation, the premiums paid for Medigap supplemental insurance were slightly greater in areas with higher Medicare risk plan penetration. A regression model is used to estimate the risk plan market penetration on Medigap premiums, in the expectation that greater competition from risk plans would lower premiums for Medigap insurance. The authors suggest several factors that may explain the anomalous finding. For example, high AAPCC rates in some areas lead HMOs to offer coverage comparable to Medigap at little or no charge to beneficiaries, effectively eliminating price competition between Medigap insurers and risk HMOs. Alternatively, the causality between Medicare HMO penetration and Medigap insurance premiums may be reversed--Medigap premiums are highest in areas with the highest Medicare reimbursements, and these areas have the highest AAPCC rates, which attract more HMOs and enrollees. In any case, it appears that HMOs exert little influence on Medigap premiums in an area, even if the HMO represents a sizeable share of the market.

Effects on Quality of Care

“The Quality of Care in TEFRA HMOs/CMPs.” Sheldon M. Retchin, Randall Brown, Rhoda Cohen, Dolores Gurnick Clement, Meribeth Stegall, and Barbara Abujaber. Richmond, VA: Medical College of Virginia, December 1992. (\$17.50)

Comparison of the inpatient care received by HMO and fee-for-service patients for two conditions. stroke and colon cancer surgery, showed no difference in outcome measures (deaths and readmissions), but sizeable differences in resource use. The length of hospital stays were reduced by 18 percent for cerebrovascular accident and 23 percent for colon cancer for HMO patients compared to patients in fee-for-service settings. Substantial reductions in utilization of

mostly discretionary tests and procedures were found among HMO patients compared to the fee-for-service setting. In addition, for patients with both cerebrovascular accident and colon cancer there was evidence that **HMOs** reduced rehabilitative care relative to the fee-for-service setting and these reductions extended to post-hospital care. The analyses are based on the hospital records of **1,600** patients.

“Evaluation of Access and Satisfaction with Care in the **TEFRA** Program.” Dolores Gurnick Clement, Sheldon M. **Retchin**, **MeriBeth** Herzberg Stegall, and Randall S. Brown. Richmond, VA: Medical College of Virginia, October 1992. (\$12.50)

Enrollees in risk plans were much more satisfied than nonenrollees with their out-of-pocket costs and identified fewer instances in which they needed care that was not covered by their health plan. However, they were less satisfied than nonenrollees with various aspects of the care they received, including the process, accessibility, and perceived quality of care. While on virtually every dimension examined enrollees were less likely than nonenrollees to rate their satisfaction level as “excellent,” less than 10 percent of either group rated their care as only “fair” or “poor”. There appeared to be no large or systematic differences between HMO and FFS patients in access to ambulatory care for the three symptoms examined (joint pain, chest pain, and urinary incontinence), but for each condition enrollees were referred less often to specialists, were less likely to have had their condition monitored, and were less likely to have had followup visits. Nonetheless, only one of the six outcome measures examined showed enrollees to have poorer perceived outcomes of care than nonenrollees. Over 93 percent of enrollees would recommend their HMO to family or friends.

Enrollment and Disenrollment Behavior

“Health Status, Financial Barriers, and the Decision to Enroll in Medicare Risk Plans.” Jerrold Hill and Randall Brown. Princeton, NJ: **Mathematica** Policy Research, Inc., June 1992. (\$7.10)

Using data from a survey of more than 12,000 beneficiaries, this study examines the differences in characteristics of Medicare beneficiaries enrolled in Medicare risk plans and those in the fee-for-service sector. Consistent with the previous findings of favorable selection in the Medicare risk program, the authors found that Medicare risk plans experience favorable selection as measured by adjusted enrollee-non-enrollee differences in various measures of health and functional status. In addition, enrollees are more likely to face financial barriers to care, as measured by low income or lack of supplemental insurance coverage by Medicaid or a Medigap policy, which may partially explain why fee-for-service reimbursements for enrollees prior to enrollment are typically lower for nonenrollees.

“Biased Selection in the **TEFRA HMO/CMP** Program.” Jerrold W. Hill and Randall S. Brown. Princeton, NJ: **Mathematica** Policy Research, Inc., September 1990. (\$10.00)

Three measures of biased selection suggest that the cost to Medicare for enrollees, had they remained in the fee-for-service sector, would have been considerably less than their cost as predicted by the methodology used to pay Medicare risk plans. **The** measures of biased selection included: (1) the ratio of Medicare reimbursements for enrollees prior to enrollment in an HMO to Medicare reimbursements for beneficiaries remaining in the fee-for-service sector, (2)

differences in the proportion of HMO members and non-members with pre-enrollment hospital stays for illnesses associated with high future costs, and (3) the ratio of mortality rates in the post-enrollment period for enrollees and nonenrollees, adjusted for enrollee-nonenrollee differences in AAPCC risk factors. Selection is distinctly favorable (from HMOs' perspective) for about two-thirds of the HMOs, according to any of the measures, and no HMO is found to have adverse selection on any measure. Selection is least favorable for IPA model HMOs and varies with other plan characteristics as well. The authors also discuss why Medicare risk plans may lose money even if they do have favorable selection.

"Disenrollment Experience in the TEFRA HMO/CMP Program, 1985 to 1988." Kathryn Langwell, Sally Stearns, Shelly Nelson, Jeanette Bergeron, Lisa Schopler, Renee Donahey. Washington, DC: Mathematica Policy Research, Inc., May 1989. (\$7.85)

Overall, 7 percent of enrollees in Medicare risk HMOs disenrolled within the first 3 months after enrolling, 12 percent disenrolled within 6 months, 20 percent disenrolled within one year, and 33 percent disenrolled within two years of enrolling. More than two-thirds of the disenrollees at each time interval examined returned to the fee-for-service sector; the remainder switched to another HMO. The analysis of disenrollment patterns was based on 109 Medicare risk plans with a total enrollment of more than 830,000 Medicare beneficiaries.

Operational Issues/Case Studies

"HMOs' Profits on Their Medicare Risk Plans." Richard T. Shin and Randall S. Brown. Princeton, NJ: Mathematica Policy Research, Inc., February 1993 (\$10.80).

Only 48 percent of HMOs examined were estimated to have made profits on their Medicare risk business, although 57 percent of these HMOs reported overall profits based on data for 1987, 1988, and 1989. Relative costs per member month for Medicare and non-Medicare members were obtained from HMOs' Adjusted Community Rate calculations and used to allocate total costs between the two lines of business. Although profit rates were not significantly different from zero, Medicare risk plans lost \$4.48 per member month on average, while the mean overall loss for the HMOs was only \$0.51. Plan features that influenced higher profits included: for-profit status, high AAPCC rates, coverage for prescription drugs, pre-TEFRA demonstration experience with Medicare beneficiaries, and a high proportion of enrollment comprised by Medicare members. The authors discuss the implications of these findings for HCFA and HMOs considering the risk program.

"Utilization Management Practices in HMOs with Medicare Risk Contracts." Robert E. Hurley and Richard R. Bannick. Richmond, VA: Medical College of Virginia, October 1992. (\$5.50)

Utilization management is a highly important function of all 18 interviewed HMOs and is approached by the plans in similar ways. Building cooperative relationships with physicians, emphasizing education rather than control strategies, investing in more comprehensive utilization information systems, managing inpatient utilization, and creating performance targets were some of the approaches that all of the interviewed HMOs employed. Significant differences in utilization management were also noted. Utilization managers were concerned about the disproportionate amount of time that must be devoted to coordinating care for Medicare

members and estimated that Medicare members required from two to four times as much effort as commercial members, given their higher hospitalization rates.

“Why Do So Few **HMOs** Offer Medicare Risk Plans in Rural Areas.” Carl Serrato and Randall Brown. Princeton, NJ: **Mathematica** Policy Research, inc. June 1992. (\$12.50)

Based on both statistical analyses and interviews with plan executives, this report presents the extent to which **HMOs** provide services to Medicare beneficiaries in rural areas and explains why the rate of such coverage is not higher. Rural counties covered by Medicare risk plans had higher payment rates, larger populations, and more physicians than rural counties that **HMOs** exclude from the service area of their Medicare plans but not from the service area covered by their commercial plans. **HMOs** cite low payment, small population, the market power of physicians, adverse selection, and a commitment to rural areas as factors affecting the ability and willingness of plans to serve Medicare beneficiaries in rural areas. Only one strictly rural Medicare risk plan was in operation in 1990.

“Why Do the Medicare Risk Plans of **HMOs** Lose Money?” Jeanette Bergeron and Randall S. Brown. Princeton, NJ: **Mathematica** Policy Research, Inc., May 1992. (\$15.00)

Telephone interviews with the executives of 20 Medicare risk plans revealed reasons why some Medicare risk plans lose money. Unsuccessful plans had low AAPCC rates, high hospital use rates, and were predominately not-for-profit plans, and group or staff model plans. Plans that lost money failed to expose physicians to significant financial risk and attributed their poor financial performance to a variety of factors other than high inpatient utilization. The authors also describe how unsuccessful risk plans intend to improve their performance, discuss plans’ recommendations for HCFA, and suggest why commercial success may not extend to the Medicare risk plan for some **HMOs**.

“What Makes **HMOs** Drop Their Medicare Risk Contracts?” Jeanne McGee and Randall S. Brown. Princeton, NJ: **Mathematica** Policy Research, Inc., May 1992. (\$5.00)

This report examines the determinants of risk program nonrenewal with statistical analyses and by drawing on the previous study of nonrenewing plans in the second annual report (Brown, Bergeron, and Shin, 1991). The most powerful predictors of the nonrenewal of Medicare risk contracts were **IPA** model type, smaller Medicare risk enrollment, higher disenrollment, less favorable selection, having 10 percent or more of enrollees in rural counties, charging a relatively high premium, having **sizeable** AAPCC differences between counties within the plan’s service area, and experiencing financial loss on combined commercial and Medicare business. The authors discuss the implications of these findings for risk plans and for **HCFA**.

“Organizational and Operational Characteristics of TEFRA **HMOs** and **CMPs**.” Shelly Nelson, Kathryn Langwell, Randall Brown, Barbara Brown, Nancy Carleton, and Gary Swearingen. Princeton, NJ: **Mathematica** Policy Research, Inc., March 1990. (\$10.25)

Based on personal interviews with key staff in 41 Medicare risk plans in late 1988, this report highlights the striking diversity among plans with respect to incentive structure, utilization control

mechanisms, benefits, premiums, copayments, enrollment, disenrollment, and quality assurance plans. Most risk plans (about 60 percent of those interviewed) paid physicians a capitation; very few paid physicians on a fee-for-service basis. About half withheld a portion of payments to physicians for later distribution, based on their utilization profile. Risk plans also used a variety of utilization control procedures, with 80 percent using primary care gatekeepers, and virtually all conduct concurrent reviews of inpatients. The authors devise a rough index of HMOs' ability to control utilization based on the strength of controls, the types of financial incentives, and the strength of the tie between physicians and the HMO. They find that capitation is the most critical factor in controlling utilization, but capitation, combined with a strong bond between the HMO and providers produced the greatest control.

“Report on HMO/CMP Utilization and Cost Data Availability for the TEFRA Evaluation.” Nancy Carlton and Gary Swearingen. Washington, DC: **Mathematica** Policy Research, Inc., May 1989. (\$4.25)

Based on personal interviews with staff from the management information departments of 41 HMOs, this report summarizes the data capabilities of the plans in this study and discusses the implications for data collection strategies for the evaluation. The authors found that data are more available for services that are rendered outside the HMO, for which the HMO receives a bill. Because of their financial and payment orientation, IPAs were found to have a higher level of data availability than staff or group model plans. The authors also found that HMOs with 5,000 or fewer Medicare enrollees have overall higher levels of data availability for more data items than larger HMOs. Overall, the availability of aggregate level data is higher for HMOs than the availability of individual level data. The authors conclude that obtaining individual level utilization and cost data from a representative sample of plans would be problematic.

Annual Reports

“The Third Annual Report of the Evaluation of the TEFRA HMO and CMP Program.” Jeanette Bergeron and Randall S. Brown. Princeton, NJ: **Mathematica** Policy Research, Inc., February 1992. (\$13.00)

The authors describe the changes in program participation and enrollment, review the findings from the evaluation to date, and document the changes in legislation affecting risk plans. Changes in enrollment, disenrollment, premiums, benefits, and market characteristics of Medicare risk plans are presented and the effect of the characteristics of risk plans on premiums and enrollment levels is analyzed.

“Second Annual Report of the TEFRA HMO and CMP Program Evaluation.” Randall S. Brown, Jeanette Bergeron, and Richard Shin. Princeton, NJ: **Mathematica** Policy Research, Inc., April 1991. (\$9.80)

This report documents the changes in legislation, program characteristics, and program size, and reviews the findings from the evaluation through 1990. Based on interviews with 34 plans that did not renew their risk contracts, the authors discuss reasons for risk contract nonrenewal.

and the suggestions that former Medicare risk plans offered on ways to improve the Medicare risk program.

“The Evaluation of the TEFRA HMO/CMP Program: First Annual Report.” Jeanette Bergeron. Randall S. Brown, and Jerrold Hill. Princeton, NJ: **Mathematica** Policy Research. Inc., June 1990. (\$6.50)

The changes between 1985 and 1989 in enrollment, disenrollment, and the characteristics of plans in the risk program and of plans that did not renew their risk contracts are presented. The authors also summarize the research design for the evaluation and activities for the second phase of the evaluation.

APPENDIX B
SURVEY DATA

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SURVEY DATA

The beneficiary survey of nearly 13,000 Medicare beneficiaries provided primary data for the analyses of the effects of Medicare risk plans on the use and cost of services, satisfaction with care, access to care, and beneficiary choice. In Section A, we explain how the sample of enrollees in Medicare risk plans and the geographically matched sample of nonenrolled beneficiaries were selected. In Section B, we document the completion rates for beneficiaries contacted for interviews and the percentage of interviews completed by proxy respondents.

A. SAMPLE SELECTION

The analyses in this evaluation were based primarily on survey data collected from a stratified random sample of 6,476 beneficiaries who were enrolled in a Medicare risk plan as of April 1, 1990 (the “enrollee sample”) and a stratified random sample of 6,381 beneficiaries who did not enroll but resided in one of the 44 market areas where these risk plans were operating (the “nonenrollee sample”). The nonenrollee sample was selected to match the distribution of enrollees across ZIP codes, to ensure that service environment and regional variations in practice patterns were the same for both groups. Enrollees and nonenrollees were required to be eligible for both Part A and Part B of Medicare coverage as of March 31, 1989 or earlier, to ensure that data on hospital stays in the past year reflected the beneficiary’s Medicare experience. Telephone interviews, requiring approximately 25 minutes to complete on average, were conducted between May and October 1990.

1. The Enrollee Sample

The enrollee sample was restricted to individuals who had been enrolled at least since January 1, 1990, in order to increase the likelihood that interviewees would have had some exposure to the HMO by the time of the interview. The enrollee sample was also restricted to beneficiaries who were members of one of the 75 plans that contained at least 1,000 enrollees as of February 1, 1990.

according to the February status report issued by HCFA's Office of Prepaid Health Care (OPHC). This restriction was imposed so that conclusions about differences across types of plans would not be distorted by the inclusion of plans that were very new or that participated at a very limited level in the risk program.

These **eligibility** criteria encompassed about 88 percent of the total number of beneficiaries enrolled in Medicare risk plans as of April 1, 1990, according to HCFA's Group Health Plan Organization (GHPO) file of all beneficiaries ever enrolled in Medicare plans. Thus, the sample should be representative of the great majority of enrollees for that time period. Less than 1 percent of enrollees belonged to one of the 20 active Medicare risk plans that contained less than 1,000 members as of the preceding month; hence, this restriction had virtually no effect on our estimates. A surprisingly high proportion, 7.3 percent, of those enrolled as of April 1, 1990 had been enrolled for less than three months. About 4.3 percent of enrollees had been enrolled long enough in an established plan but had not been entitled to full Medicare benefits for the **12-month** period preceding the start of the survey (that is, since March 31, 1989).

We used data from the February 1990 report prepared by the OPHC to calculate overall sample sizes and to stratify across **HMOs** and market areas. The samples were selected from the enrollment file maintained by HCFA's GHPO office for enrollees as of April 1, 1990, since that was the most current file that we could obtain.

Overall, **1,142,889** beneficiaries were enrolled in Medicare **HMOs** as of April 1, 1990, according to the GHPO file (HCFA's OPHC reports indicate a slightly smaller number). Hence, the sample of 6,476 enrollees represents approximately 0.6 percent of all enrollees at that time. Because response rates were slightly higher than anticipated, the sample size exceeded the target sample size

of 6,281, which is the number of observations required to detect a 10 percent difference in the probability of hospitalization with 80 percent power.’

We stratified the sample by HMO in order to obtain the maximum representation of the enrollee population. ‘In general, the target number of interviews per HMO was set equal to .00565 times the number of enrollees in the HMO as of February 1, 1990, according to the OPHC report for that date. However, in order to increase our flexibility to give equal weight either to each enrollee or to each HMO without major sacrifices in the statistical precision of either type of estimate, we set a minimum sample size of 40 for each HMO, and proportionately reduced the number of cases selected from the four largest **HMOs** in order to maintain the same total number of interviews. Thus, for half (38) of the **HMOs** (all those with less than about 7,100 enrollees), our target number of **completed** interviews was 40. For the four largest **HMOs** (with enrollments of about 80,000 to over 150,000), we reduced the sampling rate to about .004, yielding target sample sizes of 325 to 627 per plan (still far more than the target sample size of 237 for the fifth largest risk plan). For the 33 plans whose enrollments ranged between 7,100 and 42,000, we set the target sample size equal to 0.565 percent of the total enrollment on February 1, 1990.

To ensure that the desired sample sizes were achieved, we selected samples of twice the target sample size from each HMO. We then divided cases randomly into groups of 500 cases, which were released for interviewing as required until the overall target sample size was reached.

2. The Nonenrollee Sample

In selecting the nonenrollee sample, our goal was to match the distribution of the enrollee sample across market areas. We selected somewhat larger samples of nonenrollees than enrollees in each of the 44 areas, to ensure that the desired number of completed cases were obtained;

¹The sample size calculations were based on the assumption that 20 percent of beneficiaries are admitted to a hospital in any given year. Detecting an effect of 2 percentage points on a binary variable with a mean of .20 in a two-tailed test at the 5 percent significance level requires samples of 6,281 cases in each group in order for the test to have 80 percent power.

previous experience indicated that the response rate for nonenrollees was likely to be somewhat lower than for enrollees. We computed sample sizes by ascertaining the number of enrollee cases actually selected in each ZIP code (to ensure a close geographic match between enrollees and nonenrollees within market areas), and multiplying these counts by the expected response rates for enrollees and dividing by the expected response rate for nonenrollees. This procedure yielded the number of nonenrollee cases to be selected from each ZIP code.²

We used HCFA's Health Insurance Master (HIMRS) file, which contains the names and addresses of beneficiaries, to select the nonenrollee sample. The HIMRS file comprises a 5 percent sample of beneficiaries. The nonenrollee interview sample was selected at random from this 5 percent file, subject to the following restrictions: (1) the beneficiary had to have been entitled continuously to Medicare Parts A and B since March 31, 1989 or earlier, and (2) the beneficiary must not have been enrolled in a Medicare risk plan at any time since April 1, 1989. These restrictions ensured that reported utilization reflected the beneficiaries' experience in the Medicare FFS sector. After we selected the nonenrollee sample, we divided it randomly into groups of 500 cases, which were then released for interviewing as required.

With this sampling plan, weighting enrollee observations to reflect their probabilities of selection (so that the sample reflected the enrollee population) or to give each Medicare plan equal representation led only to a modest loss in statistical precision. With a minimum sample size of 40, the weights required for analyses for which each plan received an equal weight were closer to 1.0 than those that would be required with simple random sampling. (The maximum weight expected from random sampling would be 12.01, but was only 2.89 in our sample.) Similarly, for the four

²Some enrollees had address information that was clearly incorrect (for example, an address in an entirely different part of the country from where the HMO was located). Hence, we computed the percentage of enrollees in a given ZIP code by using only the set of enrollees whose listed place of residence was in one of the counties served by the Medicare plan to which the enrollee belonged. The number of sample enrollees from a given plan who resided in a given ZIP code was then estimated as the total number of plan enrollees in the sample multiplied by the estimated percent who resided in that ZIP code.

largest plans, which were undersampled, the weights were also closer to 1.0. (The minimum weight expected from random sampling would be .10, but was .14 in our sample.)

For most analyses in this evaluation, observations from each plan are weighted to reflect the plan's proportion of the program population. Thus, weights for enrollee observations from the oversampled plans are less than 1.0. Weights greater than 1.0 are required for the observations For the four largest plans, which were undersampled. Once again, the loss in efficiency is very modest, since the largest value for the weights is 1.61.

As noted earlier, the number of nonenrollees selected randomly For interviews was determined so that the expected number of completed interviews of nonenrollees in any market area would be equal to the expected number of completed interviews of enrollees who resided in that area. For all analyses in this evaluation, nonenrollees were weighted to match the distribution of weighted enrollee observations by geographic area. (The proportion of weighted observations for nonenrollees from a given county matched the proportion of weighted enrollee observations from the same county.) Thus, the weight for nonenrollees in any area is approximately equal to the average weight for enrollees in that area.

B. SURVEY COMPLETION RATES

Between April and November 1990, MPR interviewed 6,476 enrollees in Medicare risk plans and a geographically matched sample of 6,381 nonenrolled beneficiaries. Overall, 81.6 percent of the enrollees and 72.6 percent of the nonenrollees completed the interview. The lower completion rate for nonenrollees can be attributed primarily to the larger proportion of nonenrollees who could not be contacted because they had an unlisted telephone number, no telephone, or an incorrect address; 16.6 percent of nonenrollees identified for interviews could not be contacted, compared with 12.1 percent of enrollees (see Table B.2). Thus, this factor alone accounts for about one-half of the difference in response rates. Few beneficiaries in either sample (4.2 and 7.2 percent) refused to

complete the telephone interview, perhaps because each prospective interviewee had received a letter that detailed the purpose of the survey.

TABLE B.2
RESPONSE RATES AND REASONS FOR NONRESPONSE

	Enrollees	Nonenrollees
Complete	81.6 %	72.6 %
Incomplete	18.4 %	27.4 %
Telephone number unavailable	12.1 %	16.6 %
Refused	4.2 %	7.2 %
Unable to respond	1.7 %	2.5 %
Never answered/telephone problems	0.4 %	1.1 %
Total Number of Interviews Attempted	7,937	8,798
Total Number of Interviews Completed	6,476	6,381

Interviews were completed by either the beneficiary or a proxy respondent. The percentage of proxy respondents was considerably lower for enrollees than nonenrollees, 9.5 versus 17.2 percent.

Survey nonresponse is a potential source of bias, since nonresponders may systematically differ from responders in their Medicare costs and use of Medicare-covered services. To assess the degree to which our key impacts estimates may be affected by nonresponse bias, we assembled data on hospital utilization and a limited number of demographic characteristics for enrollees from several HMOs and for nonenrollees from Medicare (MADRS). The HMO data were for all enrollees--survey responders and nonresponders--selected for interview from the several HMOs. Similarly, the MADRS data were assembled for all nonenrollees selected for interview--survey responders and nonresponders. From these data we were able to assess whether key impact estimates were significantly different when the estimation sample included and excluded nonresponders. The analyses find no significant difference in impacts generated from samples including and excluding nonrespondents.

The results indicate that the estimates obtained from the survey data (i.e., on responders) should not be biased by nonresponse.

Item nonresponse was generally very low for the numerous variables we incorporated into the analysis (less than 1 percent). For a few sensitive variables, nonresponse rates were much higher (the highest rate was for income, approximately 10 percent). In order to maintain sample sizes in the analyses, we used sample means for missing values for the small number of variables where item nonresponse exceeded 3 percent. In regression analyses a dummy variable was used to denote whether a sample mean replaced a missing value for an observation, relaxing the assumption that those who fail to respond to a particular question had the same value for that variable as did the responders.

Finally, it is useful to note that the interviewed enrollees had substantial exposure to the HMO. The majority of enrollees in the survey were enrolled more than 3 years at the time of interview, and only 11 percent had been enrolled for less than one year, as the following distribution shows:

Length of Enrollment:	Percent of Enrollees:
1 year or less	11.1
≥ 1 to 2 years	19.6
≥ 2 to 3 years	17.3
≥ 3 to 4 years	24.1
≥ 4 to 5 years	11.9
≥ 5 to 6 years	7.3
≥ 6 years	8.6

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APPENDIX C

SAMPLE DESIGN AND ABSTRACTION
OF HOSPITAL MEDICAL RECORDS

SAMPLE DESIGN AND ABSTRACTION OF HOSPITAL MEDICAL RECORDS

To estimate differences between HMOs and the fee-for-service sector in the quality of inpatient care, data were abstracted from hospital records on random samples of Medicare beneficiaries in the two sectors for patients with colon cancer or a cerebrovascular accident (CVA). In this appendix, we describe the instruments used to abstract the data, and the eligibility criteria and design for selecting the sample of patients and hospitals.

A. DEVELOPING ABSTRACTION INSTRUMENTS

Both of the instruments used for abstracting inpatient data were adaptations of previously developed instruments that had been used successfully in recent studies of quality of care. The elements of care examined through medical record abstractions ranged across the spectrum of care, from history-taking to test-ordering, and from disease staging to actual patient outcomes. In addition, information on hospital and physician characteristics from the two samples were evaluated. To examine differences in care attributable to characteristics of physicians, the names of two physicians of record were recorded in each abstracting form. Data on these physicians were obtained from published sources.

1. Adapting the NMCE Colo-rectal Cancer Abstracting Form

The Medical Record Abstracting Form for Colo-rectal Cancer, which was developed for the National Medicare Competition Evaluation (NMCE), was used as a basis for drafting the abstraction form for colon cancer for this study. Evaluation staff and three clinical specialists augmented the NMCE instrument with the generic sections discussed above (on eligibility, patient characteristics, etc.), and twenty-five specific items designed to provide more detailed data related to the surgical treatment of colon cancer. Additional inclusion and exclusion criteria screened out ineligible cases. The section collecting data on the medical workup prior to and at the time of admission was

expanded to collect data on preoperative risk factors. The nursing assessment was evaluated for completeness and quality. Reference material was included in the abstracting form to assist the abstractor in determining the patient's functional level on the day of admission. Although limited information is available in the hospital record on the preadmission diagnosis of colon cancer, questions were added to address this through the pathology report. The instrument was pretested using copies of medical records of patients hospitalized for treatment of colon cancer at two different hospitals.

2. Developing the CVA Abstracting Form

We adapted the form developed by The RAND Corporation for abstracting information from the medical records of patients with cerebrovascular accident (CVA). The RAND Corporation, under contract to the U.S. Department of Health and Human Services (Health Care Financing Administration), designed the medical record abstraction form for use in an evaluation entitled "Assessing Quality of Care for Hospitalized Patients with Cerebrovascular Accident." The form was intended to measure the complexity of the case, the process of care, and the outcomes experienced by the patient. Thus, it was suitable as a basis for our evaluation, but because our purpose and level of resources differed from the Rand study, it was necessary to modify the abstraction forms. A number of items were deleted, others were added, and changes were made to lessen the burden on hospitals and time required for abstractors to complete their work.

B. ELIGIBILITY CRITERIA

To select appropriate samples for the evaluation of the care in HMO and FFS settings, eligibility requirements were selected so as to yield a clinically homogeneous population for which the quality of care criteria established were relevant. These eligibility criteria were:

Eligibility Criteria for Colon Cancer:

1. diagnosis of colon cancer (ICD-PCM 153.X)
2. colorectal surgery performed during the admission to be abstracted (ICD-PCM 45.X, 46.X, 48.X). Cases with 45.0-45.41 as the ONLY procedure performed during the hospital admission were excluded. These cases represent patients who have had only diagnostic procedures on the large intestines, or have had only local excision of a polyp through colonoscopy.
3. at least 65 years old
4. at least a 24 hour stay during the admission for the operative procedure
5. sufficient information in the medical record to make adequate judgments on at least 75% of data to be abstracted' to be counted as an abstracted case
6. Patients who had been previously operated on for colon cancer were excluded in the sample. Patients who had been previously operated on for other cancers were not excluded.

Eligibility Criteria for Cerebrovascular Accident:

1. diagnosis of cerebrovascular accident (CVA), stroke, or cerebral thrombosis. These diagnoses include the following ICD-9-CM codes: 431, 434.X, 436.X
2. If a physician noted that all of the marker CVA symptoms resolved within 24 hours then the patient was INELIGIBLE. Answer was on the admission history and physical, consult or progress reports from day 1 or 2, and the discharge summary.
3. If first symptoms associated with CVA had onset more than 14 days prior to the admission then the patient was INELIGIBLE. Answer should be based on the admission history and physical, consult or progress reports from day 1 or 2, and the discharge summary.
4. If patient had any of the following diagnoses then the case was considered INELIGIBLE: Subdural bleed, Multiple sclerosis (MS), Head trauma resulting in skull fracture, Meningitis, Encephalitis, Brain abscess, primary or metastatic cancer involving the brain, On chronic dialysis or history of kidney transplant.
5. If patient was noted to have evidence of definite, probable, or possible new **myocardial** infarction (MI) or heart attack on an EKG report ON DAY ONE, then the patient was **INELIGIBLE**.

¹ This figure is arbitrary. However, the case should not be abstracted if much of the information in the record is missing (e.g., pages missing). The number of records for which this happens, however, should be logged.

6. If the patient **DID NOT** have **AT LEAST ONE** of the following symptoms or signs on admission, then the patient was considered **INELIGIBLE**:

Visual deficit: loss of or diminished eyesight, blurred vision, field defect, optic atrophy, hemianopsia or visual inattention

Sensory/motor deficit of face: change in feeling, tingling, numbness or paralysis of face

Speech deficit: aphasia, dysphasia, dysarthria, difficulty talking, slurred speech

Motor deficit of limbs: compromise, paralysis, paresis, weakness of extremities (fingers, hands, arms, toes, feet, or legs); ataxia, abnormal gait

Sensory deficit of limbs: change in feeling, tingling, numbness, dysesthesia, paresthesia of extremities (fingers, hands, arms, toes, feet, or legs)

Coma: comatose, unresponsive, unarousable, coma vigil, unconscious; responding only to painful stimuli

Symptoms of neurologic change: somnolent, lethargic, poorly arousable, semicomatose, stuporous, obtunded (exclude seizure, syncope, restlessness or agitation)

Exhibiting posturing: described as **decerebrate** or **decorticate**

Not **responding** to touch or tactile stimuli

Unable to follow commands

Confused or having a **seizure**

C. SAMPLE DESIGN

To assess the differences between the quality of care delivered in **HMOs** and in the FFS sector, we required samples of patients in the two sectors that were comparable, representative of the populations being compared, and sufficiently large and **unclustered** to yield a high probability of detecting important differences between the sectors. The requirement that the samples be comparable--similar on other dimensions that might affect the quality of care--increases our confidence that any observed differences between the groups are attributable to the different styles of care in the two sectors. The requirement that the samples be representative ensures that the findings are not due to the peculiarities of a particular group of **HMOs**, hospitals, or patients that

were sampled. The fact that concentrating observations in a few **HMOs** or hospitals leads to lower statistical precision led us to spread the samples over a **sizeable** number of **HMOs** and hospitals. This allocation also helped to achieve the goal of minimizing the burden on any of the individual hospitals included in the study.

To achieve these objectives, we used a three-stage sampling approach to select the samples of patients whose medical records were to be abstracted. For the HMO samples, we first selected a set of **HMOs** that would be representative of the Medicare risk program, then selected (for each condition) a set of hospitals from which to draw patients, and, randomly selected specific individuals. For the FFS samples, we identified specific counties from which to draw beneficiaries, then selected (for each condition) a set of hospitals serving beneficiaries residing in these counties, and then chose the samples of patients from these hospitals. Below we describe the sample size, allocation across **HMOs** and hospitals, and method of selecting these samples.

1. Sample Size

To obtain the desired level of precision, samples of 400 patients in each sector were required for each condition. With samples of this size, we have 80 percent power to detect effects of 10 percentage points on binary outcome variables with a mean of 50, using a two-tailed test at the .05 significance level. For binary variables with a very high mean value (e.g., .90), the detectable difference at 80 percent power is about 5 percentage points.

Based on the actual means and variances of some key quality of care measures from our study, we have 80 percent power to detect effects of about 2 days on the average length of stay for CVA patients, for which the mean value in the fee-for-service sector was about 10.5 days: The detectable effect on whether preoperative antibiotics were given to colon cancer patients is about 4 percentage points, but the mean value for the fee-for-service sample was nearly 95 percent.

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Given the strategy of conducting tests at the .05 level, we can be confident that observed significant differences between the two sectors in the sample reflect true differences in the population. With the sample sizes available, we can also be reasonably confident that when a significant-difference is not found in the sample for a given outcome variable, the difference in the population, if any, is not large.

2. Allocation of the Samples

Twenty HMOs were originally selected for the quality of care study. The number of HMOs included in the study was limited because patient lists had to be obtained from the HMOs and gaining access to hospitals and abstracting data from many different locations would be costly. Twenty plans was deemed sufficient to yield the required number of cases, given the estimated incidence of colon cancer and CVA, and to provide a representative mix of plans.

To ensure that the set of plans selected would cover a range of sizes and be representative of the enrolled population, the sampling strategy was to select the 20 plans randomly, with the probability of selection being proportional to enrollment, using an interval sampling approach (described in section 5 below). For each condition, twenty cases would be drawn from each of the HMOs, with the sample allocated equally across 4 hospitals, which were to be selected with a probability proportional to the number of cases at that hospital. This approach ensures that each enrollee with the chosen diagnosis has an equal probability of being selected for the sample, provided that the incidence of the condition is equal for different plans. The FFS sample of nonenrolled beneficiaries would be drawn from the same market areas, and allocated across market areas so that it would match the distribution of the enrollee sample. This plan was revised somewhat to accommodate several factors:

- One of the 20 plans declined to participate
- Some plans had fewer than 20 patients with the tracer condition (especially colon cancer)

- Because of their large size, 4 plans were selected with certainty
- Some plans used only 1 or 2 hospitals

Some hospitals had fewer than 5 cases

The details of how these problems were resolved are described in **Retchin, et al. (1992)**.

The FFS samples were more straightforward. The total number of cases to be selected from a given market area was set equal to the number of HMO cases allocated to that area. Cases were then allocated across counties within the market area so as to match the geographic distribution of enrollees in the Medicare **HMOs** in the sample. The number of hospitals selected from the set of hospitals serving beneficiaries residing in a given county was one-eighth of the number of cases to be drawn from the county. Eight cases were then selected at random from each of the chosen hospitals.

3. Selection of the HMO Sample

The HMO sample was selected in the Fall of 1989, based on the enrollment of Medicare risk plans as of September 1989, in order to allow ample time to obtain the cooperation of **HMOs**, receive their lists of patients having one of the tracer conditions, select the hospital samples from these lists, and obtain the hospitals' agreement to pull the selected cases and allow us to abstract the data. **The** set of eligible plans was limited to the 82 plans having 1,000 or more members as of September 1989, since smaller plans would have few or no cases. Plans were selected by "interval sampling," a pseudo-random procedure that yields a higher probability of selection for large **HMOs**, but enables the analyst to ensure that each individual patient has an equal probability of selection.

The 20 **HMOs** selected were geographically dispersed and include 62 percent of the total Medicare risk enrollment as of September 1989. Thus, the ultimate sample should be representative of the population of Medicare risk enrollees and the care they receive. The plans were located in

12 different states (typically, from only one metropolitan area in each of these states). One state contained four plans, five states had two plans each, and six of the states contained only one plan.

Only one of the 20 selected plans declined to participate in the study. This decision was made so late in the process that a replacement plan could not be selected. Hence, the sample was reallocated over the 19 participating plans as described in the previous section. Five of the 12 sites are in the West, while only one site is in the South, reflecting the much greater proliferation of HMOs in the West than in the South. As Table C.1 shows, the 19 participating plans had a distribution by model type very similar to that of the full set of 82 plans.

TABLE C.1
DESCRIPTION OF PARTICIPATING HMOS BY MODEL TYPE

Model Type	Percent of All Plans	Percent of Sample Plans
IPA	48 %	47 %
Group	36 %	32 %
Staff	16 %	21 %
Total	100%	100 %

As noted earlier, the sample is heavily weighted toward the larger plans. However, this is appropriate since the results are intended to reflect the experience of the risk program in its entirety. To obtain a sample that is representative without having to use sample weights, each individual should have an equal probability of being selected for the sample. When only a limited number of plans are to be selected, the requirement of equal probability of selection for all enrollees means that large plans must have a higher probability of inclusion than small plans.²

²Since enrollees in the small plans who have the tracer condition will almost surely be selected for the sample if their HMO is chosen, the smaller HMOs must have a lower probability of being selected to begin with, to offset this higher probability.

The HMOs that agreed to participate then provided lists of their enrollees who had been hospitalized during 1989 for colon cancer or CVA, along with the name of the hospital to which each had been admitted. These lists were used to tabulate for both conditions the number of eligible cases treated at each hospital. Six of the HMOs had too few colon cancer cases (less than 16); two of the plans had too few CVA cases (less than 16). All of the eligible cases in these small HMOs were included in the sample, except for one HMO in which, the 10 colon cancer cases were spread over 9 different hospitals. In this instance, only 4 hospitals were included. The shortfall in cases arising from these plans and from the nonparticipation of one of the 20 plans was then spread across the other plans by multiplying the originally planned number of cases from each HMO by the factor necessary to make up the shortage (1.31 for colon cancer; 1.19 for CVA). This led to samples of 21 cases in each of the 10 mid-sized plans for colon cancer, and an average of 48 cases in each of the 3 largest plans (sample sizes were proportional to enrollment in these larger plans). For CVA, which is more common than colon cancer, only 2 plans had a shortfall of cases. Thus, the number required from the other HMOs was somewhat smaller: 19 cases from each of the 14 mid-sized plans and an average of 44 cases from each of the three largest plans.

Once the number of cases was determined, the hospitals were selected using the procedures described in **Retchin** et al. (1992). Four hospitals were selected for each small and mid-sized HMO, when possible, with probability proportional to size. For the three largest plans, the number of hospitals chosen was set equal to one-eighth the number of cases to be drawn from the HMO. For each HMO, separate hospital samples were drawn for the two conditions.

In total, 65 hospitals were selected for the colon cancer sample for enrollees, and 71 hospitals were selected for the CVA analysis. For many plans the same hospitals were selected for the two conditions, since HMOs tended to rely on relatively few hospitals for virtually all of the inpatient care provided. Also, in areas with multiple plans, a given hospital was sometimes selected multiple times.

In any case, however, the average number of cases drawn from a given hospital, for either condition, was about 6.

Patients whose records were to be abstracted were selected at random from the hospital-specific lists of HMO patients (unless all of the cases were needed). Since some patients would be found to be ineligible for our sample according to our criteria, we assigned random numbers to all of the patients at each hospital in the selected sample and listed them by order of selection. The abstractors at each hospital were told how many cases to complete at each hospital, and instructed to proceed down the list of cases until the desired number of eligible cases had been abstracted. For both conditions, we found approximately 23 percent of the HMO cases to be ineligible or unavailable.

4. Selection of the Fee-for-Service Sample

The sample of beneficiaries receiving care in the fee-for-service sector was drawn from the primary counties served by the HMOs in the sample, as described above. Limiting the counties included in any plan's market area to those containing at least 10 percent of the plan's total enrollment as of September 1989 yielded a set of 31 counties in the 12 market areas. The number of cases to be drawn from each county was determined and MEDPARS files were used to rank order hospitals by the number of colon cancer and CVA patients in 1989 who resided in the county of interest. The number of hospitals selected for each county was one-eighth of the number of cases to be drawn (rounded up to the nearest integer). Approximately 60 hospitals were selected for each condition (some hospitals were selected for both conditions). In none of the counties were hospitals selected with certainty. Thus, an equal number of cases was selected from each of the hospitals chosen from a given county. About 15 percent of the FFS cases were found to be ineligible or unavailable.

5. Replacement Cases

In a few hospitals, especially for the HMO samples, we were unable to complete the desired number of abstracts, because there were too few eligible cases available. In most hospitals replacement cases were available; however, this was not the case for some hospitals with only a few cases. In these instances we selected replacement cases from other hospitals that were used by the same HMO and were already in our sample. These replacement cases were allocated across the other hospitals used by the HMO in the same proportion as the original sample, to the extent possible. For the small **HMOs**, where all of the available cases were to be abstracted, no replacement cases were available within the plan. For these **HMOs**, replacement cases were selected from the patients of other **HMOs**. Where possible, the cases were drawn from hospitals used by another HMO in the same market area and already included in the sample. If no replacement cases were available from that area, they were drawn from an HMO of comparable enrollment size in a different market area.

6. Comparability of HMO and FFS Samples

For the four samples (colon cancer and CVA, for HMO and non-HMO patients), 256 hospitals were selected. Because many hospitals were chosen for both the HMO and FFS samples, For both conditions, or for multiple **HMOs**, the sample comprised only 156 unique hospitals. The total number of cases abstracted from a hospital ranged from 1 to 48, with an average of 10 cases per hospital. Table C.1 gives the distribution of hospitals and cases across states for the four samples.

The colon cancer and CVA samples were both fairly well balanced between enrollees and nonenrollees; that is, in most areas the number of enrollee cases and nonenrollee cases were approximately equal. The number of hospitals from which the samples were drawn were also similar, though somewhat smaller for the nonenrollees. Thus, the extent of clustering of the cases was comparable for the two beneficiary groups (about 6 cases per hospital for each group for each condition), both overall and within areas. Any observed differences between the enrollee and

nonenroilee samples on quality of care measures are therefore not attributable to differences across areas in practice patterns or to the influence of a small number of hospitals.

The hospitals used by **HMO** patients in the study offered a similar range of services to the FFS hospital on-average. Very few differences in services relevant to the studies performed for this project were found between the HMO and **FFS** hospitals in the sample. One noteworthy exception was the provision of therapeutic radiologic services (i.e., radiation therapy), which were more often available at hospitals where **FFS** patient records were reviewed exclusively, or at hospitals where both HMO and FFS records were reviewed. Since one of the tracer conditions may require radiation therapy as a therapeutic option (i.e., colon cancer), the non-availability of this service could be important.

D. RECRUITING AND TRAINING OF NURSE ABSTRACTORS

Reliable abstraction of data from medical records requires the use of staff with a strong clinical background and intensive training on the particular instruments to be employed. Thus, in each of the 12 market areas we hired 1 or more registered nurses with extensive clinical experience and strong educational credentials, and required each to attend a rigorous five day training session on the instruments. The number of nurses hired in a particular area depended upon the number of abstracts to be completed.

E. FIELDING

1. Participation Rates

The **HMOs** and hospitals selected for the study were remarkably cooperative. As indicated earlier, 19 of the 20 **HMOs** that were asked to participate did so, providing the required lists of Medicare patients with colon cancer surgeries (ICD-9 codes 153.xx) or CVA (ICD-9 codes 431.xx, 434.xx, and 436.xx). Even more impressive was the participation of all 156 hospitals that were contacted. In addition to providing access to the medical records, 44 hospitals also provided

photocopies of medical records for two eligible cases, for use in our assessment of inter-rater reliability. The 100 percent participation rate of hospitals was attributed to the advance letter from HCFA requesting the hospital's participation and to the design of the study, which minimized both the number of cases drawn from a hospital and the burden on hospital staff and facilities.

Fielding took place over the period September 1990 through February 1991, with each abstractor being expected to complete about 80 abstracts on average, subject to the number of cases enrolled in each market area. A total of 2,016 cases were ultimately released to the field in order to yield the desired 1,600 completed abstracts. Most of the need for additional cases arose from discovering in the field that patients were ineligible for our study (13 percent of the cases released). For colon cancer, the primary reason for cases being ineligible was that the cases had had a previous surgery for colon cancer. For CVA cases, the reason for ineligibility was typically that the onset of conditions occurred more than 14 days prior to admission or that the symptoms were resolved within 24 hours after admission.

The proportion of ineligible cases ranged from 10 to 17 percent, with rates of ineligibility being lower for the fee-for-service cases than for HMO cases for both conditions (see Table C.2). This discrepancy was due primarily to the poorer quality of the data supplied by HMOs on patients' ICD-9 codes. Within each of the groups, ineligibility rates were very similar for the two conditions, about 10 percent for the conditions for FFS cases and 15 versus 17 percent for the two conditions for HMO members. In addition to the ineligible cases, about 2 percent of the cases assigned to the field were not abstracted because no record was found at the hospital that the patient was ever admitted there. Over half of these instances were for CVA cases in the HMO samples, because the patient lists supplied by the HMOs occasionally included patients who went to the emergency room for a suspected CVA, but were found to not have had a CVA and were not admitted as an inpatient. For another 4 percent of the cases, the medical record was not available at the time the abstraction was being done.

TABLE C.2
DISPOSITION OF SAMPLES BY FINAL STATUS

Sample	Final Status					Total
	Complete	Ineligible	Patient Not Admitted	Record Not Available	Other	
Fee-for-Service						
CVA	408	48	4	25	0	485
Colon Cancer	401	49	6	14	1	471
HMO						
CVA	402	77	23	20	4	526
Colon Cancer	412	91	6	22	3	534
Total	1623	265	39	81	8	2016

Abstracting the necessary data from the medical records required an average of about 1.5 hours for the colon cancer cases and about 1.75 hours for the CVA cases. However, the time varied widely, ranging from about 30 minutes to 6 hours for both instruments.

2. Quality Control

Each completed abstract was reviewed by a quality control editor, a trained medical records technician. As part of the manual edit, diagnoses and procedures that were not coded by the hospitals were given ICD-9 codes. Missing information as a result of abstractor error was the main quality control problem identified during the initial review; very few inconsistent or out of range responses were detected during the manual edit. The **abstractors** were instructed to provide additional information to permit the principal investigator to resolve obvious inconsistencies. The

data were also subjected to automated range and consistency checks during data entry of the instrument.

If the manual edit identified unresolved, inconsistent, or out of range responses, or if more than one item was missed as a result of abstractor error, the case was returned to the abstractor for additional data. (To control costs, abstracts with only one missing data value were not returned to the field.) The survey assistant contacted medical records department staff in several hospitals to obtain missing information to expedite the retrieval process. In total, 228 abstracts were sent back to the field for missing information.

Once this process was completed, the great majority of cases (83 percent for CVA, 93 percent for colon cancer) had no missing items. Only one data item (whether the nursing assessment included evaluation of the patient's functional status) was missing from more than 1 percent of the cases. This problem was attributed to the placement of this question on the abstraction form.